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Egyptian Architecture: New Facts.

THE so-called Middle Empire of Egypt, or that period of its existence till the time of the Ptolemies from the beginning of the eighteenth dynasty, presents a great change in its architecture. The temple assumed greater development, and the original shrines were enriched with peripteral courts and halls of columns in a line of the long axis of the shrine. Before the doorways were placed towering obelisks, one at each jamb, or else colossal figures; and, when these were wanting, huge tablets, recording in many lines of hieroglyphs the praises of the founder or embellisher of the temple. Besides these decorations, the approach to the building was through a dromos or avenue of sphinxes or seated statues, and this last kind of approach was copied by the Greeks at the shrine of Branchidæ. The temple also had an outer wall or *enceinte* of sun-dried bricks, the Greek peribolos. The energies and wealth of the country were no longer devoted to heaping up geometric mountains or pyramids, but still to the production of colossal buildings with columns and sculptures finely carved and brightly painted. Each portion of the temple had its appropriate sculptures. The obelisks represented the triumphal columns, and the decorations of sculptures applied to the shafts of the inner columns of the colonnades no doubt suggested the idea of the sculptured shafts of the Temple of Diana at Ephesus, and the subsequent triumphal columns of the Romans where a spiral relief tells the history of a campaign. In the same way the pylons or propylæa of the Egyptian temples were the prototype of the Roman triumphal arch, and the sculptures of the Egyptian propylon were essentially the representations of the wars and military exploits of the Pharaoh who dedicated them to the gods. The Egyptian temple was rectangular, and there were no circular buildings in Egypt except granaries, *s'enti*, which were domes like half an egg, with a door in the middle to pour in the grain, and which were probably imitated from the primæval wigwam of the valley of the Nile. The idea of elevating these domes on columns or roofs does not appear in any architecture of a good period. The vicissitudes and additions of the great temple of Karnak are well shown in the work of Mariette Bey entitled "Karnak, Étude Topographique et Archæologique," fo., Paris, 1875, tracing its condition from the eleventh dynasty to the Ptolemies. In this plan Mariette has followed that of Lepsius for a portion of the maps. It shows the development of the temple by the continued additions of court-yards one after another in the direction of the long axis of the original shrine, although occasionally courts were added on the side, and at an angle to the original building. The temples, it appears from the papyrus of Rameses III., had groves and gardens, in which were planted valuable exotic trees, and there was a great lake or pond at Karnak, which was essential, for sacred or other purposes, to the service of the temple. There was also a place for the reception of prisoners of war, who were given by the king to the service of the god; and there must have been dormitories for the priests and cells for those who dwelt, as it appears from the Greek papyri, in a kind of monachism in the temples. In all cases roofs were flat, but many of the courts were hypæthral. The dominant type of the temples, rooms, and details was the rectangle; the columns were cylindrical, with different capitals of the lotus and papyrus flower to imitate the stem and flower of these water-plants, or else with palm-leaves, to make the column imitate the palm. Occasionally, columns were replaced by caryatid figures, which carried the roof, and in the rock temples they represent the monarch and builder in the type of Osiris. In the temples of Athor, or Aphrodite, the Egyptian Venus, the columns are surmounted by her bust, head-dress, and collar, and represent standards surmounted by the head of the goddess. One feature of Egyptian columns was sculpturing the shaft with figures in intaglio, in divisions, a principle represented in the columns of the Temple of Diana at Ephesus, and carried to its full development in the triumphal columns of the Roman emperors from an Egyptian origin. In all these works the Egyptians showed great skill and artistic talent, but were deficient in some details, and their rectangular constructions are never perfectly accurate, either as to the length or parallelism of sides. Attached to some of the temples, as Dendera, were crypts, or underground chambers, recently discovered by Mariette Bey, at Dendera, which contained the valuables of the temples. Although the temples were on the largest scale, they were chiefly a series of courts, the smaller part being the naos or adytum, placed at the end, and containing the statues of the deities. The approach to the main building, at the time of the eighteenth and nineteenth dynasties, was formed by a dromos or avenue of sphinxes and lions, and these often conducted the worshipper or marked the passage from one court to another. The profusion of columns is the predominant feature of the architecture. Little or no information, however, is afforded by the monuments about the names and details of the portions of the temples beyond notices of a few rooms, such as the *mesxen* or *mammesi*, the place of the birth of the god, and the expressions "hall," *usx*, for the hypæthral courts, that of *ãb* or "sanctuary" for the adytum, and the *pa^en s'a* for the "archive-room" or "library." It is not till the Ptolemaic period that much information is afforded by the inscriptions, and that is by the Temple of Denderah, published by Duemichen and Mariette. From this it appears that the Entrance or Great Court was called the *Uskh Nut* or "Hall of the Goddess Nut," one of the titles or forms of the Goddess Athor; that the second hall was the *Uskh* or "Hall" of "her Majesty," or the same goddess. The sanctuary in the midst of a court of chambers was called the *Uskh Nub* or "Gold Hall." The chambers on the three sides bore the titles of the purposes to which they were attached, as "the place or chamber of Birth," or "New Birth"; the chamber of the boat of the Goddess Athor, the chamber of Denderah, the chamber of fire, that of the god Ra, the chamber of purification, the hall of Isis, lady of Athribis, the treasury of supplies, the chamber of the ark and clothes. Other halls had similar descriptions attached to the chambers in them. Considering that all the temples were covered with sculptures and paintings, it is, of course, to some extent evident that they must have been appropriate to their respective halls and chambers. These are arrayed in several rows side by side, and represent the king standing on one side and the deity on the other, accompanied by their names, titles, and speeches. Thus in the lower row of one of the corridors at Dendera, the king offers his heart to the Goddess Athor, sistra to Athor and Horus of Edfu, incense and libations or fire and water to Osiris and Isis for a good inundation, vases of wine to Athor, flowers to the goddess, fields to Athor and her son Horus, sistra to Isis and Ahi, food to Isis and Horus in a succession of pictures, in which the goddess promises him in return to beloved of men and women, a good vintage, high inundation, and other benefits. In the smaller chambers the pictures are equally appropriate, the monarch being depicted as offering valuables in the treasury, oils and cosmetics in the laboratories. One series of sculptures, however, prevails in the temples, and is found complete at Dendera, representing, in four compartments, the initiation or coronation of the king. The monarch proceeds dressed in royal costume, preceded by five banners, to the temple; he then receives the purification, or baptism, from Horus and Thoth, after that the crowns of Upper and Lower Egypt; and finally presents himself before the goddess; but it is difficult to discover, in all instances, these scenes, although some represent the monarch making the first brick for the building of the edifice. The other subjects found in the temples are too numerous to describe, embracing various religious scenes. The principal point about the temples is that, although painting and sculpture rapidly declined under the Ptolemies, and Roman architecture visibly improved, especially the shape and arrangement of columns and architraves, and that the names and uses of the various chambers and halls are distinctly given in the Ptolemaic temples. The specs or excavated rock temples disappear at this period entirely, and the whole system of the necropolis altered also, which began to be executed in another manner. It is

remarkable that there are no other remains of civil architecture, although bridges are represented over the Tanitic or Pelusiac branch of the Nile, on the monuments of the nineteenth dynasty, and that granaries, arsenals, barracks, and fortifications have entirely disappeared, with the exception of traces of the wall of Sesostris, on the eastern frontier, and the fortified works at Samneh and El Kab, in which are found all the elements of modern fortification, the *terre pleine*, the rampart, the berm, ramp, ditch, and sally-port, and some of these as old as the twelfth dynasty. Several of these works were executed in unbaked bricks, and have consequently crumbled away. The same applies to most of the walls which surrounded edifices. These brick walls had occasionally doors inserted into them of another material, as the granite door discovered in part of the peribolos at El Kab; and a kind of double wall at Abydos, discovered comparatively recently, has low buttresses to support it. Besides the public buildings and offices which have disappeared, few remains of the domestic architecture have survived. It has been supposed that they were originally made of mud, with roofs of palm-branches also covered with the same substance. They were rectangular, with rectangular chambers at the side of the court-yard; and although they reached, according to Diodorus, to the height of five stories, none have remained. It appears, however, from the numerous foundations around the temples, that the houses of the great cities were grouped round them, and that the temples towered up as modern cathedrals in the centre of the towns. Although many representations of houses are seen in the sculptures of the temples and tombs, showing that the wealthier houses had extensive grounds and gardens attached to them, and that the city may have spread over a vast area, no traces of a continuous street or quarter of any city has been made out. From the papyri, however, it appears that the houses even of the poorer persons or working classes were approached by avenues of trees. Not only do the papyri and tombs give some information about the houses, but one, in mentioning the barber, describes him as wandering from street to street in search of employment, and the word street, *mer*, is determined by a labyrinthal line like the Greek key-pattern, showing that the streets were winding, and not laid out in straight lines, crossing each other at rectangles. In fact, the town may, in its ground-plan, have resembled the labyrinth itself, especially at the earlier periods. Recently the wooden model of a house has been discovered at Thebes, with its columns and figures unfortunately much broken and mutilated. The Egyptian house had chimneys or *malqufs*,—not for the fires, but to catch the north wind, to cool the interior. The windows had mats or shutters; the doors were often folding. The culinary operations often represented in the tombs do not throw any light on the arrangements of the architecture of the kitchen, except that the cooking-stoves were detached; and of the sanitary arrangements there is no information, modern excavations and researches having been chiefly exhausted on temples and tombs, especially their spoliation. It is only the great monuments which have survived or attracted attention, and the remains of the houses of the Pharaonic period have been built upon, or carried away so repeatedly and successively that scarcely a vestige of the original ground-plan attests their former existence. This, however, has not been the fate of the sepulchres. The pyramid system had been continued till the twelfth dynasty, and probably later, but after the invasion of the Hykshos or Shepherds, the tombs, instead of being excavated in rocks, and covered by these geometric mounds, were tunnelled in rectangular passages in right lines into the heart of the mountains of the Bab el Molouk, and only diverted from the right lines when they came across or near to a former sepulchre which the architect wished to avoid. These tombs at Thebes commence with the eighteenth and terminate with the twentieth dynasty. The entrances were afterwards carefully concealed and filled up, to protect the royal mummies; but as early as the reign of Rameses X. sacrilegious Egyptians, from the accounts of the papyri, had penetrated the sepulchres, and burnt and plundered the mummies and coffins. Taking the western valley of the El Asassif in addition to the Bab el Molouk, twenty-four tombs of kings and queens have been discovered, not indeed so many as there mentioned by Strabo showing the principle on which they were constructed. The tombs are long rectangular galleries, with recesses passing into a large rectangular hall, in which the sarcophagus was deposited. Some information on the names, dimensions, and destination of the different parts of one of the royal tombs is afforded by a papyrus at Turin, representing the ground-plan of the tomb of Rameses IV. at the Bab el Molouk. This plan, which is imperfect, does not agree with the actual one of the tomb as given in the "Description de l'Égypte," vol. ii., pl. 79, fig. 7. The plan, however, has some defects, as it represents the hill on which the tomb has been excavated as granite instead of limestone. The plan is accompanied with inscriptions traced in black in hieratic, and close to the door, which is represented bolted, is "the position of the door." The length of the entrance-passage is stated to be 35 cubits, the breadth 6 cubits, and the height to the ceiling 9 cubits 4 palms, decorated with chiselled work filled with paint." The dimensions extended to the outer door, for the length of the corridor is described "as 30 cubits, and the breadth 5 cubits 1 palm." At the right side of the corridor is figured a recess, described as "a niche of 2 cubits long, 1 cubit 2 palms broad, and 1 cubit 2 palms deep." These exist on the actual plan. From this corridor commenced a rectangular chamber, entered by a door, which is represented bolted, and which has at the door the words "the place of the door." At the upper part is written, "The waiting-hall, of 9 cubits long, 8 cubits broad, and painted with sculptures filled with paint." The middle of this hall has "Passage of the entrance-corridor, 3 cubits." This hall by another, also entered by a door, and in the middle of it is represented the cover of the sarcophagus of the king, made of granite, in shape of a royal cartouche, having in relief the god Osiris, with Isis and Nephthys at his sides. The inscription on this part of the plan calls it "the Golden Hall,"—*Uskh Nub*,—a term also applied to the temple, "in which he "lies 16 cubits square and 10 cubits high," and adds after, "painted with engraved sculptures filled with colours." The following additional remark, "decorated with subjects relative to his majesty [the king], on four sides, and the gods of the lower hemisphere" or "Hades." This is followed by a statement checking the dimensions, as "from the commencement of the first divine corridor to the Golden Hall, 136 cubits 2 palms"; and this is followed by another relating to the subsequent portions, as from the Gold Hall to the Silver Hall, and to the most beautiful chamber, 24 cubits 3 palms, making 160 cubits 5 palms." To this succeeds another rectangular chamber, also entered by a door, with the following description. The corridor, which is in "the place for the sepulchral figures, of 14 cubits 3 palms long, 5 broad, and 6 cubits 2 palms high," with the usual description of the paintings. At the right side is a kind of side-room, described as "the chamber where the offerings to the god were deposited, 4 cubits 4 palms long, 1 cubit 5 palms high, and 1 palm 2 fingers deep." This was not closed by a door. Besides this, at the right side nearer the door, was another rectangular chamber, closed by a door of 10 cubits long, 3 broad, 3 cubits 3 palms high. In a line with the corridors is the last chamber, called "the silver chamber or treasury of the decorations" or valuables, 10 cubits long, 3 cubits 1 palm broad, 4 cubits high." Although the plan does not correspond with the actual conditions of the tomb of Rameses IV., it may have been one prepared but not acted upon, but still gives the general design of these tombs. The long corridors for the passage of the sarcophagus, the ante-room; the sepulchral chamber, in which the sarcophagus was deposited; the room for the sepulchral figures; and another room for the ornaments or decorations; while the niches and rooms at the sides of the corridors held other sepulchral objects, and completed the final deposit of the deceased king. These requirements, more or less abridged or diversified, were carried out in the sepulchres of queens, princes, and princesses, all of which, till the close of the twentieth dynasty, pierced the solid calcareous rocks at the Theban necropolis. Greater diversity prevailed in private tombs, which were constructed at Gournah, with chapels and subterraneous chambers and corridors; but the last great sepulchre is that of Petamenophis, of the twenty-sixth dynasty, of great extent, and with portions vaulted with arches. The tombs of the monarchs after the twentieth dynasty are unknown, but may be subsequently discovered on other sites, as Bubastis or Sais, although there is unfortunately, convincing evidence that some have been rifled and probably destroyed.

THE PROBLEM OF THE PARTHENON.

THE question as to "the mode in which the interior of a Greek temple was lighted" has received much attention in Europe, and especially in England; it has been the subject of books, pamphlets, chapters, and of discussions at the Royal Institute of British Architects. Yet even those who have put forth their own views upon it with unfaltering confidence can scarcely deny that it still fairly remains a question;—that is to say, there is still far more difference of respectable opinions regarding it, than can be set down as that mere residuum of irrational dissent which is ever invincible by most persistent braying in the logical mortar. It is perfectly fair for the advocate of a particular and original solution to be confident that the world will, at last, come round to the same and to his own conviction, and to be a little impatient that the world moves so slowly towards so natural a consummation. Such, however, is the world's way, especially in relation to a subject which does not involve responsibilities of inevitable and immediate action. Still, when a question, merely abstract though it be, and though what some may call merely a question of history of art is concerned, it is not the less a matter of opprobrium when the question has, in itself, considerable interest, that those who are competent to entertain it should thrust it aside in carelessness or idleness without settling to some definite conclusion. The outside world has a right to require from candid and conscientious experts a declaration of some weight and agreement. Whatever may be the amount of evidence forthcoming in any matter, its import, when duly studied, is decisive and positive, either for the certainty of a particular solution, for the superior probability of one, the equal plausibility of more than one, or the general uncertainty or insufficiency of all. In a scientific question the issue is simple, and so should be the result upon a show of hands. The adjournment of the discussion *sine die*, or the settlement of an ultimate appeal by a majority of one before a disinterested court, imply neither more nor less than a serious intellectual flaw somewhere. Otherwise and in other places, that a resolution is carried with difficulty by a majority on a close division, need not argue more than that other interests are in question besides the merits of the ostensible issue; but in matters of science it implies that a division has been taken prematurely, before the fruits of discussion have matured, and discussion, therefore, is bound to proceed.

There is, therefore, nothing for it but to take up again the discussion as to the mode of lighting the interior of Greek temples, and endeavour to move it, if possible, one step nearer to, at least, a provisional settlement, be it but to a distinct recognition of how much we at present do not and cannot know.

The immediate invitation to revive the discussion comes from beyond the Atlantic. No. 1 of the papers of the Harvard Art Club is sent to us from the United States, entitled "The Hypæthral Question." It is the work of Mr. Joseph Thacker Clarke, architect, who passed through London last year on his way to Greek lands to expend time and labour, and much more besides, on an original examination of Greek and of Doric architecture more particularly. European architects will be found to have left him but scanty gleanings in this field. The greatest service which he could render in this direction would probably be to present the world with surveys of the temples of Theseus at Athens and the great temple at Pæstum, executed with some approach to the completeness of the Parthenon of Penrose. It were sanguine indeed to expect, and it probably is not expected, that any monumental aid is still obtainable that bears upon the so-called hypæthral question. The hypæthral question *so-called*,—for, indeed, the title is a misnomer as applied to a discussion how temples that are positively distinguished from proper hypæthral temples were lighted.

To the mind of an ancient the conception of a temple did not necessarily imply any building at all,—at least, its conditions in this direction might be satisfied by a paved and, perhaps, parapetted area, marked off as sacred, and set apart for sacred rites;—that a *naos*, which is

properly a dwelling, a structure in which the statue of a divinity was housed, should be placed on such a site, and be regarded as especially sacred, was natural, but the open-air precinct retained its distinction as consecrated.

It is quite in accordance with this usage that Josephus, in his references to the temple at Jerusalem, speaks of the open courts which intervened between the temple proper, or naos, and the surrounding porticos,—the Court of the Women, Court of the Gentiles, and so forth,—as the hypæthral temple, the temple in the open air, as distinguished from that under cover. A temple that had lost its roof, or that from any circumstances was unfinished, and had not received the roof which was part of the design, might be called hypæthral in the general sense of open to the sky, as unroofed, or wanting the roof; but the specific hypæthral temple, as described by Vitruvius, was one which might have internal colonnades like the Royal Exchange, but, like that, was destitute, and designed to remain destitute, of a covering roof over the central avenue, or, as we should say, the nave. Such a temple was partially covered in and partially uncovered, and thus contrasts with the absolutely open-air sacred places (*sub divo hypæthraque*) which in another place he distinguishes emphatically as independent of architecture, from structures in true architectural style, Doric, Corinthian, or Ionic (1, 2). It is quite true that when he describes the hypæthral temple he specifies that it has ten columns in front, and is dipteral, &c.; but this is only one of many examples of his way of confusing the accidental and the characteristic. Our modern logicians would say that he fails by neglecting to "quantify his predicate," and would have done better to say "Decastyle temples with roofless naves are *some* hypæthral temples"; and in the same way, "Temples with eleven columns on flank are *some* hexastyles," would have saved him from implying, as he does, that no temple which had not this exact number of columns on flank was a proper hexastyle. However, the case is clear enough to a careful reader, that the characteristic of a proper hypæthral temple was that its central internal avenue, or area, was open to the sky, and thus that the term hypæthral has no application whatever to temples that are known or are assumed to have had certainly all but entirely continuous roofs, like the Parthenon, or the temples of Ægina and Bassæ. The possibility of an arrangement for the admission of light, and even of light and air, through one or more openings in the roof, of limited extent, would not entitle us to apply to them the term hypæthral, or to speak of any such limited or occasional opening as an *hypæthrum*, even if we had any right to coin such a noun at all, to which the philologers would have a word of their own to say. If, therefore, we could agree that Mr. Clarke is successful in the attempt which he has made most adventurously, and with commendable industry, or assent to any other explanation that hitherto has found an exponent and advocate, the determination of how the interior of the Parthenon was lighted would settle for ever, not the "hypæthral question," but the non-hypæthral. It is not too much to say that as to an "hypæthral question," nothing of the kind, in any consistent sense of the term, exists. A temple designed to admit the light of heaven freely at all times upon its main area,—a temple open to the sky,—was naturally and unquestionably referred to as hypæthral, but that alone; and there, as Dr. Johnson would have said, "is an end on't."

As regards the lighting of such a temple as the Parthenon, however, there is a very serious question, because it was roofed,—for the very reason that it was non-hypæthral. We need to consider what were the requirements, what were the difficulties in meeting these when fairly and carefully estimated. As regards the means of meeting these difficulties, we may attempt the problem by considering by what variety of means, effective at least, and better or worse, we should ourselves attack the difficulty with the appliances at the command of the ancients; from the scantiness of remains it is only finally that we compare conclusions with evidence, more or less direct and positive, as to actual Greek practise. A mere summary of considerations is manifestly all that can be ventured on here; it may be that little more is required,—nay, that little more is practicable.

The naos of the Parthenon,—the main apartment at the further end of which the chryselephantine statue of Athene, 38 ft. high, was erected, had a full length of 100 ft. nearly, and a breadth of 60 ft. The pedestal was at about 60 ft. from the entrance. The opening of this single eastern door was about 16 ft., with 32 ft. height. No direct sunlight could ever enter by this door, which, set back more than 30 ft. from the edge of the stylobate, was also partially covered, even in a direct line, by the columns of the shaded pronaos and peristyle. The light obtainable, even at such disadvantage, would doubtless not be without its value, but was manifestly insufficient for even the general apartment, and absolutely without effect for the display of the statue.

Now, the requirement for the display of this marvel of art must be taken into chief account, when the mode of lighting the naos is in question. Colossal as it was, it was finished in every detail with the most delicate art, from the very helmet, with its griffins and surmounting sphinx, to the edges of the sandal soles, chased with the battle of centaurs; the rested shield, both within and on the outer convex, and the pedestal itself, were occupied by elaborate compositions.

If there is one thing in the whole matter that we may be justified in taking for granted, it is that such a statue in an apartment especially designed for its reception, and in the design of which Phidias had controlling influence, was most effectively displayed; and displaying sculpture implies a full sufficiency of light, and what affects the architectural considerations, of light that arrives from above.

It must be frankly said that we come here upon a difficulty that puts the theory of Mr. Clarke, that the temple was lighted exclusively by artificial light, out of court at once. After a review, which occupies his entire essay but for a final paragraph, of difficulties which none are disposed to underrate, he produces at last as the single undispersed residuum in his logical crucible, even this,—"In view of these various considerations, notwithstanding the now general belief to the contrary, I cannot but believe that the Parthenon, the temples of Olympia and Poseidonia,—in short, all true Greek temples, were covered with a complete roof and ceiling, and that the light by which they were illuminated was artificial." Mr. Norton, of Harvard College, in an introductory note to his friend's paper, may well be reminded, and reminds us of the Miltonic illumination, in which—

> "Many a row
> Of starry lamps and blazing cressets, fed
> With naphtha and asphaltus, yielded light
> As from a sky."

Nothing less, indeed, would be needed; but poetic imagination is more ready to suggest such a scene than archæology to justify it. What lamps, what torches, would be required, and how disposed and regulated and protected? And assuming light to be so obtained, with any approach to sufficiency, what was to be arranged about the inevitable fumes and smoke? It may be safely averred that no assemblage, however unstinted of such ancient lamps or candelabra, simple and compound, that are known to us abundantly enough, either in remains or description, would answer the required purpose, a purpose most assuredly not restricted to a single special anniversary. With every expression of true respect for the genuine zeal and interest in the exposition of this paradox, there is no suppressing the conclusion,—*Solvuntur risu tabulæ*. Mr. Fergusson seems to have provoked the revival of the notion by alluding to it as obsolete; he will, perhaps, take warning, and keep stricter watch over candour, and not again imprudently rouse a fallacy that has gone satisfactorily to sleep, by stepping aside to give it a passing spurn as too gross for the most paradoxically inclined.

It is, however, easier to denounce and demonstrate certain theories as impossible than to settle, among several that are in competition, which is moderately plausible and which most plausible. There are cases, and this it is to be feared is among them, when it behoves theorists to be on their guard with unusual caution; to bethink themselves that explanations may be possible yet scarcely plausible; and even that solutions which have all probabilities in their favour, considering what evidence is forthcoming, may possibly be wrong after all, and inasmuch as the evidence is in itself not decisive can only rank as possibilities. Lord Melbourne is reported to have said, "I wish I could be as certain of anything as Tom Macaulay is of everything." All honour is due to those who have the courage of their opinions in any case; even when they prove mistaken they have, at least, helped on truth by challenging the discussion of a definite issue, and so far clearing the ground; but the merit of such courage is marvellously enhanced when the opinion has been tested first with industry and care; the courage of assertion is after all a virtue of secondary temper, if it cannot develop into the courage to modify, or even to renounce, under due stress of evidence and argument. It may be seriously doubted whether any theory as to the mode of lighting the interior of the Parthenon has yet been evolved, that entitles its most confident advocate to any more positive confidence than that it may be safely entertained as provisionally plausible. We have dismissed the theory of lamp-light illumination as marking zero, if even that is low enough, in the scale of plausibilities; what, let us consider, are the conditions to be dealt with by those who recognise that the statue of the Goddess, whose special mythological attributes associated, and even went far to identify her, with the cope of heaven, could only be duly exhibited to admiring Hellas in radiant daylight direct from her own sky.

Lateral windows we would say there were certainly none, were it not for fear lest the positive assertion should be again taken as a challenge and provoke another paradox. So far, however, no theorist has taken this view. The light from the door was not only insufficient, but also out of relation to the statue,—a still more serious objection, and we are left to exercise daring and ingenuity in introducing light through the roof,—introducing light and excluding weather, which, in the country where Boreas was fabled to have carried off the nymph Oreithyia, was not to be trifled with. Rain at Athens can descend in a deluge, and architects who have familiarity with the contingencies of scaffolding in an exposed situation, speak very respectfully indeed of the wind on the Acropolis. These considerations make it difficult to give that assent to arguments of Mr. Fergusson in this case, which he so constantly commands, in virtue of something more than the vigour of his dialectic. His section of the Parthenon (History of Architecture in all Countries, woodcut 143, part i., book iii. 1865) exhibits a scheme for admitting the light through a clearstory,—in his own words, "similar internally to those found in all the great Egyptian temples," but with a change of arrangement necessary to a sloping roof. The tiling, in fact, is shown as omitted at certain parts over either aisle, where lateral ridges were to be admitted, while the complete and regular slope of the roof was retained between the openings. The design is too well known to require further description. The openings which are shown seem much larger than necessary; but, even if we make this allowance, the exposure of the delicate fabric of the ivory-plated statue to violence of weather would be surely excessive. As the scheme is put before us, if we rightly understand it, it does not appear what is to prevent the freest penetration into the interior of storm winds and storm waters. There are also difficulties as matter of structural arrangement in interrupting the tiling, as shown directly over the side avenues, in such a manner as to afford a course for light in the required direction.

The full height from the floor of the naos to the ridge line of the tiles is 55·354 ft. Of this dimension the utmost that can be allowed for the height of the apartment is 44 ft. The height which we have assigned elsewhere to the naos, on fully developed theoretical grounds, is as near the extreme available as 43·570 ft. This would allow nearly 6 ft. clear above the crest of the erect goddess, which is certainly not too much. But barely enough space remains beneath the rafters, which carried the tiles and the top of the side walls, for beams to bear the ceiling. This ceiling we may consistently conjecture to have been of wood, let us say of cedar, and coffered with richly-designed lacunaria. It is also a fair provisional conjecture that it was at least of the same height from the floor in the side avenues as in the central. The ceiling which is thus assumed represents that ceiling for effect and ornament which Pausanias speaks of in the temple at Elis as associated with the true protecting roof. The height of the apartment is properly taken to the line of internal cornices supporting the cedar-beams. The joint thickness of these beams and of the lacunaria has then to be deducted from the 15·354 ft. left above the ceiling at the centre. By analogy of the porticos 3 ft. or 4 ft. at least must be allowed, and the dimension from the floor thus

increased to 47 ft., brings us, as we have seen, as near as we can venture to go to the beams which would rest upon the lateral colonnades to bear the tiles. Timbers of very considerable importance must have spanned the nave, taking bearing above the lateral columns, and completing a truss to be responsible for the weight of the marble roof above. In accordance with the marvellous structural economy which, throughout the building, seems to rival the very organisms of nature, there is just room enough left for them and no more.

Those who will take the trouble to verify and set out these measurements as given by Penrose, will find that, consistently with the low slope of the roof, light could not have been admitted through interruptions of the roof above the aisles. We are, therefore, it would seem, thrown perforce upon the theory that the light was admitted through the roof, above the central avenue, an arrangement which would be most appropriate,—is it too much to say, was absolutely demanded?—for direction and distribution. It is here of importance to insist upon the very restrictedness of opening which is required in a latitude like that of Athens, for the perfect illumination of a considerable interior, and especially when light is to be admitted not laterally, but from above. How many of us have observed the extraordinary diffusiveness of light in Italy. The cathedral of Florence is lighted by windows so moderate and of such sparseness that they would leave a northern church of half the size in gloom. As it is, the light is only not in excess because the glass is not clear, but coloured. The theoretical opening, therefore, is to be reduced to a minimum, whatever that may be; it would, of course, be so placed as to display the statue and its enrichments most perfectly,—and, therefore, not immediately above it,—but rather to the front. The perforation then would either break the ridge line, or be on one or other, or more probably on both sides of it. As we are speculating now of necessity, not as to what must be, but rather as to what might have been, we prefer to take the alternative of corresponding lateral perforations,—one, and one only, let us say, on each side. It is thus more easy to imagine a contrivance for dealing with watershed. It may be observed, in passing, that while dismissing any supposition as to the burning of either incense or offerings within the nave, it is reasonable to assume that some thought was given to occasional ventilation.

This consideration, indeed, is cogent against the application which in itself were possible enough, of *lychnites*, or *lapis specularis*, of translucent slates, so permanently fixed as not to necessitate any actual opening. As regards appearance in the interior, we have only to imagine that the systems of coffers were arranged to be symmetrical about a pair of larger openings; the light, in fact, would be admitted through merely larger and open coffers. The very limited distance from the summit of the decorated lacunaria to the tiling, which, even at the centre is only 7 ft. or 8 ft., does away with cavil as to chimney-like openings; the openings might easily be so arranged by widening upwards as to allow only the clear sky to be discernible from below beyond the mouldings. Such openings would be elaborations of the primæval *opaion*, or central opening, of which there are so many notices. We are not without certain illustrations of the scheme, that tell at least as analogies. Among the antiquities of Palmyra, in Wood's publication, we see representations of elaborately-coffered ceilings, with a differentiated centre, where the sky is shown as visible, and figures apparent beyond. It is not to be doubted that these are representative of foregone facts, and familiar constructions on large scale, whether the Parthenon furnished an example or no. Resting in our hypothesis so far,—for with hypothesis only can we deal,—we may consider in what way we can keep out the inroad of weather, and that consistently with conservation of architectural symmetry and beauty. Certain fragments of marble tiles were found both at Bassæ and Ægina, which are so modelled as to seem to declare a relation to openings for admission of light; they will be found figured in the illustration to a paper read by the late Mr. John W. Papworth, before the Royal Institute of British Architects, Jan. 15, 1866. But if they betray the fact of an opening, they do not help us to a clear comprehension of how the opening was closed or protected. Considering, however, what ingenuity the Greeks displayed in the multifarious adjustments and contrivances that complete the roof and covering of the Temple at Bassæ, we are scarcely justified in assuming that they could not cap a square opening with a rimmed and sliding slab which should be perfectly weather-tight.

The plate already referred to gives, moreover, two examples of Greek sarcophagi which present models of a temple, two out of many that might be adduced. If we interpret this evidence literally,—and it cannot safely be ignored,—it implies that the offensiveness of a visible notch in the roof was precluded by a surrounding box-like margin or attic, which rose level at least as high as the line of the roof ridge. This enclosure, which would accommodate [arrangements against weather, might be expected to range as oblong with the plan of the temple, but otherwise need be but of comparatively moderate length.

If such a scheme were really employed, it would abolish what may fairly be regarded as an anomaly, though hitherto unnoticed. It would give an outward visible sign that the nave of the Olympian divinity was not in utter obscurity. It may fairly be considered that some external expression of the admission of light into an apartment of such length, so closed in and secluded by porticos,—some hint to preclude the suggestion of the blue-eyed goddess being immured in darkness,—would be satisfactory. Such an indication, indeed, may be boldly challenged as æsthetically indispensable.

Thus have we again thrashed out the subject of the lighting of the larger Greek temples, whether with the result of distinguishing some stray golden grains, it is for others to say. The theory of artificial lighting may be safely denounced as a will-o'-the-wisp that will tempt few followers; but when the advocates of other views ask themselves candidly what after all the solution must be, not the least ingenious perhaps will answer, "I do not know."

THE MARVELS OF SEVILLE.

THREE hours and a half suffice to convey the traveller from Cordova to Seville. The time is pleasantly spent, and the journey should be performed during the daylight, for the scenery is particularly refreshing when compared with what has been endured further north. The vegetation of Andalusia unfolds itself on either side of the line, the olive and orange groves nestle at the foot of hills surmounted by the ruins of Moorish castles that still seem to threaten the surrounding country. Cormona and its castle are passed, and then the Alcala de los Panaderos, where the best bulls are reared for the arena. This town is also celebrated for its excellent bread, but such small attractions are not likely to stop the traveller who can already obtain a distant glimpse of the Giralda, rising high above the "marvels" of Seville.

"Quien no ha visto a Sevilla
No ha visto a maravilla,"

is a universal maxim, which is also a very general subject of dispute. The tourist approaches Seville thirsting for the proverbial marvels which have attracted him from a great distance, and accordingly he is soon ready to acknowledge that Seville is a marvellous city. But, on the other hand, if we put aside the cathedral, where are the marvels? The Alcazar is certainly wonderful, but the Ayuntamento, the Palacio de San Telmo, the Torre del Oro, and the Casa de Pilato are not sufficient to justify the great reputation of Seville. The fact is that the attractiveness and peculiarity of the city rest on a multitude of little details rather than on its public monuments. These latter, we repeat, are remarkable, but do not correspond with the extraordinary reputation this town enjoys. Yet we cannot say we were disappointed with this, the capital of Andalusia, and of all the places we visited in Spain it is to Seville we should prefer to return. Perhaps the secret of its charms is due to the purity of its atmosphere; if its features are not always perfect, the beauty of its complexion is unimpeachable. A common-place house, all bedaubed with whitewash, which in London would soon become a grimy eyesore, assumes the aspect of a fairy palace at Seville. The cheap whitewash shines like marble in the brilliant sun, and the common tiles of the roof borrow a multitude of tints from the azure of the sky that delight the eye and fascinate the imagination. We must b very matter-of-fact indeed, very hardhearted and resolute, to analyse what at a little distance we cannot help admiring. It all seems so beautiful that we cannot easily reconcile ourselves to the closer examination that shall prove that we have been in raptures over the most ordinary bricks and mortar, the cheapest tiles, the roughest ornamentation and a universal smear of whitewash. From the high elevation of the Giralda, from the other side of a square, or looking down at the other end of a street, all this has appeared so clean, so harmonious in colour, so light and bright, that it is impossible to realise how little of this splendour is due to the work of man, and how much to the magnificence of the climate. There Nature also provides striking varieties of tints, from the silver grey of the morning to the blue, too bright to contemplate, of noon, gradually toning down till it reaches the unfathomable marine of the starlighted night. Under this variating influence the same view changes so completely in aspect that it has all the charms of novelty, disclosing at each modification of light details not noticed before, new harmonies of colour, and other reliefs of shade.

The beauties of Seville are not, however, limited to its climate and its effect on the public and private buildings of the town. The daily life presents a multitude of picturesque incidents, and of curious peculiarities. The multifarious dresses of the peasantry, the gaily-caparisoned mules, the variety of pack-saddles, enliven the streets. Some of the pack-saddles are made to convey valuable goods, satins, cloths, curiosities; others are overloaded with green olives; while some are charged with the commonest of articles, such as vegetables, coals, water-buckets, and even house refuse. The mules, singly or in droves, stroll leisurely through the narrow streets, stand in open doorways, or look into the shop-windows of the Sierpes. As in this, the Regent-street of Seville, there is no causeway, these animals mingle freely in the crowd, and it is necessary to be on constant guard not to come in collision with the pack-saddles. In the other streets, the shops are most striking in appearance. Unlike those of the Sierpes, which are on the English or French model, they have no front window or doors; the whole is entirely open, two or three thin iron or stone columns alone support the cross beam of the ceiling above. The counter at the back of the shop, the shopmen, their customers, the whole process of bargaining, is fully exposed to the unimpeded view of the persons passing to and fro in the street. This system has the advantage of ensuring a complete ventilation of the shops, and keeps them cool in summer. It is not favourable to the display of goods, which can only be hung from the walls, ceiling, and at the sides and back of the shop, where they are not in a good light; but it seems excessively peculiar, and, to those who live north of the Pyrenees, has the charm of novelty. The crowd, also, that throngs these odd-looking streets is itself as remarkable as anything else. We have the greatest variety of type. The sombre Spanish gentleman, enveloped in his long dark cloak, shoulders a real Moor in bright blue loose breeches and light red Tunisian jacket; the toreadors, with sombrero, tight-fitting black clothes, and long thin pigtails; the soldiers, the gipsies, the peasant with silk handkerchief tightly fastened round his head, the workman with a French blouse, the English tourist in an impossible Tweed suit; and, in and out through this cosmopolitan medley, tripping along on the prettiest feet in the world, fully disclosed by appropriately short skirts, the Andalusian beauties add, by the lustre of their eyes, to the general brilliancy of the scene. It is in all these details that we found Seville a city of marvels, otherwise we should have disputed its claim to that qualification.

A certain element of danger also helps to excite the imagination. Brigands, and robbery attended with violence, are such every-day *rencontres* that a number of persons appear in the streets fully armed. While the inhabitants of the town carry their revolvers concealed in their pockets, the peasant gaily and defiantly trots into Seville, with a rifle slung over his back and a huge revolver protruding from his blue or red belt. The ride home at night to some outlying country farm, with the proceeds of the day's business in hard cash in his pockets, would expose the small peasant proprietor to untold dangers if he did not make a formidable display of deadly weapons. Even in town, acts of violence are frequently attempted, and

generally with success. While we were there a custom-house officer carrying some money along a well-frequented street was shot and robbed at nine o'clock on a beautiful sunny morning. The sound of a pistol-shot is the signal for a general stampede: people prefer to abstain from inquiring what is the matter till the thieves have had plenty of time to commit their robbery and make good their escape. Curiosity in such moments might be dangerous, and no one seeks to help the victim till the perpetrators of the crime are at a safe distance. The senile guardians of the night, armed with long spikes and huge stable lanterns, are much more efficient as a chorus in the "Barbiere di Seville," at her Majesty's Opera, than as the protectors of the streets in Andalusia. They are useful in calling out the hours of the night, so that we need not disturb the mosquito curtain to strike a light; but the ringing of a church-clock might render the same service, and in a language more readily understood, at least by foreigners. All these considerations, together with the warnings, more or less exaggerated, the traveller will invariably receive, give to the whole town a glamour of adventure and romance. The narrow, tortuous streets, the barricaded windows, where, in the quiet of the night, ladies appear in answer to serenades sung in earnest, greatly enhance these feelings.

At Seville, as at Cordova, there are many Moorish houses remaining in perfect condition. The climate is so dry and equable that they exhibit no sign of decay, though several centuries old. These are by far the most appropriate to the climate, and we fail to understand why new houses should be built after the Parisian style when this is suited neither to the climate nor habits of the people, and must tend to obliterate the picturesque aspect of the town. Nothing can be more delightful than the *patio*, or internal court, of the Moorish house, with its tropical plants, fountain, and *azulejos*, or Moorish tiling. The cool colonnade of marble pillars that runs round and serves as a sheltered communication from room to room gives the inhabitants of each apartment easy access to the court, which in summer is sheltered by a canvas hung above from roof to roof, and is used as a sort of open-air drawing-room. The streets, notably the Sierpe, are also covered over with canvas in summer, so as to exclude the sun, and they thus assume the aspect of a lofty passage, heavily charged with tobacco-smoke, and ever re-echoing to the monotonous cry of *agua, agua;* for in every thoroughfare there are melancholy-looking men, more or less in tatters, who stroll slowly up and down heavily laden with one or two large *alcarrazas*, from whence they extract draughts of cool water for about a farthing per glass. Here and there, also, wherever the irregularity of the buildings provides a corner sheltered from the traffic, little stalls with picturesque awnings are established, at which a great variety of refreshing and cheap beverages are dispensed to the ever-thirsty crowd. It is a curious study for the Englishman, whose mind is troubled by the great drink question, to stand and watch the trade of these little establishments. They are more frequented than the wine-shops, and are considered far more respectable; in fact, all classes indulge in the cheap and excellent drinks provided. These consist of a multitude of syrups mixed with very cold water; of lemonade or orangeade, made with the fruit itself, and in your presence; or of *orchata*, a delicious mixture of crushed almonds and sugar, which, when dissolved in water, converts it into a milky substance, and imparts a most delicate and refreshing flavour. In all this we have no wine, and, still less, spirits. Even tea and coffee would be considered too exciting for constant consumption while out of doors in the hot streets. Yet we have seen, many times, magnificent men,—toreadors and others, gipsies, horse-tamers,—men, in fact, addicted to athletic exercise, leap off their horses, and drink with the utmost satisfaction one of these innocent decoctions. But few of them would have accepted, even if offered, anything stronger; and certainly it cannot be said that this temperate *régime* did not agree with them. In physique they were some of the most perfect men we have ever had occasion to admire. Agile, with well-set limbs, broad shoulders, small heads and features, often recalling those of a Roman emperor, they seemed the personification of life and health. It is not surprising if the daughters of such a race enjoy a world-wide renown for their beauty. Their parents are the most sober of people though they live in a land that supplies strong wines to the whole world.

Such are some of the social and general aspects of Seville. To these features must be attributed the interest which this town has ever excited. The architect, if he is a true artist, will take them all into consideration. To understand the architecture of a town we should also understand its social life. It would be impossible to judge Seville merely by the stones with which it is built. Its cathedral should be admired in the light of its every-day existence, as a part of a living thing, a great city. Who would journey all the way to Spain to examine Murillo's paintings without first profiting by the opportunity of studying his beggars in the flesh? In these few words relating to Seville we have sought to demonstrate that in noting the very great difference existing between daily life in the capital of Andalusia and that to which we are accustomed in England, new ideas will be generated, new combinations of colour, light, and structure may suggest themselves, bringing forth fresh conceptions of beauty.

THE OPENING OF THE THAMES BRIDGES, AND THE RESULT, AS REGARDED BY THE ARCHITECT.

THE freedom of the Thames bridges is a subject that has been so long and so repeatedly advocated in the columns of the *Builder*, that many of our readers will feel more than ordinary sympathy with the expressions of rejoicing which made the river-side, from Lambeth to Battersea, gay with flags, and resonant of hearty cheering, on the Queen's birthday. Triumphal arches, not reared at municipal expense, but the free expression of the voluntary system among the riverside population, spanned the road over which the Prince and Princess of Wales, accompanied by two of their children and by the Crown Prince of Denmark, and joined by the Duke and Duchess of Edinburgh, drove from Marlborough House to Lambeth Bridge, then along the Albert Embankment to Vauxhall, on to the Chelsea, the Albert Suspension, and the old Battersea Bridge; crossing each of these structures on their route, and each of which the Prince declared to be thenceforth free and open to the public.

In a former number of the *Builder* (September 23rd, 1876) we gave some account of the twenty-one road and eleven railway bridges which cross the Thames below Windsor, without counting the two tunnels or the steam ferry, of which so little has recently been heard. Four of these bridges, which, ten years ago, were private property, namely, those at Kingston, Walton, Staines, and Hampton Court, were purchased for 90,773*l.*, and thrown open to the public between 1870 and 1876. Waterloo Bridge and the Charing-cross Railway Foot-bridge were freed last autumn; and five more bridges were added to the number on Saturday, the 24th of May, making eleven in all. Only three more, viz., the Wandsworth, Putney, and Hammersmith Bridges, now remain to be purchased, and a peaceful revolution of the utmost value to the properties and inhabitants of the vicinity will thus have been completed in a very reasonable space of time.

The cost at which these bridges have been secured to the public is as follows:—Lambeth Bridge, which it is already hinted must not be allowed to be covered with a crowd, and as to which we may thus anticipate that it may be found necessary to replace it by a more substantial structure, cost 36,000*l.* Vauxhall Bridge, formerly known as the Regent's Bridge, cost something over a quarter of a million. Chelsea Bridge cost 75,000*l.*; and the Albert and Battersea bridges make up the total cost to the round figure of 536,000*l.*, a sum of money which has been, we cannot doubt, well laid out. Before last week, as the chairman of the Metropolitan Board of Works remarked in his address presented to the Prince and Princess of Wales, there was no free bridge in the metropolis westward of Westminster. By the end of the year it is hoped that there will be none but free bridges throughout the metropolitan area.

The Prince of Wales said in reply to the address,—"The opening of the five bridges westward of Westminster is an important event in the annals of the metropolis, and I rejoice that you should have chosen the Queen's birthday to declare them free. A free communication across the Thames is an incalculable boon to all classes of the inhabitants on both sides of the river, and it is our earnest hope that you will be enabled to carry your promised work into effect within the specified time." As to this there was but one opinion expressed. The total cost up to the present time of the seven bridges as purchased for the public was stated, at a parish festivity which followed, to be "something like a million of money. Sir Chas. Dilke, on the same occasion, anticipated a farewell to Old Battersea Bridge (which can only be a question of time), in the simple observation that "the sooner they got rid of it altogether the better." The erection of a suitable bridge at this spot is a matter which before long must become urgent.

The increase of the traffic over Waterloo Bridge was stated, by Earl Cadogan, at 90 per cent. As this has occurred within about eight months, it is not too much to say that the traffic may be taken as doubling, within a year, from the abolition of the toll. We hope that exact statistics may be published on this score, although now that the Act of Parliament has been passed, and the measure of freeing the bridges has been so far carried through, there is not that object in ascertaining statistics which exists when a Parliamentary contest is to the fore. We confess that we should have expected the increase in the case of Waterloo Bridge to have been considerably more. One of the great points that were urged in behalf of the compulsory purchase of the bridge was that the tolls imposed at each time of crossing were prohibitory on the working people whose abodes might be to the south, and their occupation to the north, of the bridge. In this case the removal of the toll might have been expected to do much more than send nineteen passengers over the bridge for every ten who paid their halfpenny. Such a result might have been expected, with some confidence, from a reduction of the toll, say, from a halfpenny to a farthing. Perfect freedom, we confess we were among those who thought, might be expected to do much more. It must be remembered, however, that anything involving change of residence does not immediately come into operation. There is a difference in the air of sprightly business occupation between the Thames and the London and South Western Railway Station already, that is highly significant. And we shall not be surprised to find, some few years hence, that the traffic along this main line of north and south communication has very considerably increased.

One thing, however, seems already to make itself tolerably clear, as to this matter of river-crossing, and that is, that the particular requirements of each locality are very unlikely to be long neglected. Anything like forcing a cross-river public traffic we may well consider to be impracticable. Public wants soon indicate themselves, and modes of supplying them are a natural result. Density of population is one very great element in such considerations; but it is far from being the only one. Disposition and occupation of populations are quite as important to consider. Thus we may see, in many parts of England, how the axis of a town has accommodated itself to a certain line, sometimes that of a road, sometimes that of a river. Cross communication, in course of time, becomes necessary, and springs up. But there is almost invariably a great difference in the volume of the traffic which flows in the two directions. Something of this exists in London; and although we speak without any hesitation as to the importance of the movement now so happily carried thus far, we are not without some hesitation as to whether its immediate effects, as regards the value of property, or the march of the builder, will be as marked as we should have anticipated if a fuller volume of traffic had attended on the freeing of Waterloo Bridge.

When, as far back as pre-Roman times, London was rising into importance, a ferry at the site of London Bridge, and another at Westminster, were ample for the needs of the population. The maintenance of a ferry in those days was a pious work. There is an ancient and very beautiful legend of the ferryman at Lambeth, who on a stormy night towards the close of the life of Edward the Confessor, was roused by two cloaked strangers and bidden to ferry them across the Thames to Thorney Island. As the man waited on the bank for their return, he heard sounds from the newly finished, but unconsecrated, Abbey Church of St. Peter. Lights gleamed from its round-headed windows bells rang out from its pilas-

fered towers; and the scent of incense came on the westerly gale. After a time the two strangers returned, and for payment to the ferryman only advised him where to cast on the following day his hook for a salmon. Our readers may remember the rest. The salmon of the Thames, like the earlier fish in the Lake of Galilee, had treasure in his mouth,—not a piece of money, but a ring, from the appearance of which the Abbot of Westminster recognised the fact that the two strangers were no other than the Apostles Peter and John, who had themselves taken the trouble to cross the Thames on a stormy night to consecrate the abbey which should afterwards witness the bestowing of the sacred chrism on the kings and queens of England.

From the time when such a legend was credited, or held to be credible, to the time when the Prince of Wales declared five bridges to be thrown open in one day, we apprehend that the requirements of the riverside inhabitants of the Thames have been very fairly met. We now look upon a toll-bridge as a relic of the past. We consider it, like a turnpike, to be a barrier to that free circulation which is an important element of national welfare. Such, no doubt, is the case at present. But let us not forget the cause. Let us not forget that the builder of a toll-bridge has been, in his day, a public benefactor no less than, before him, was the establisher of a ferry. From 1815 to 1835 the best roads in the world were the self-supporting turnpike-roads of England. Nowhere was there such travelling, nowhere were there such horses. No one grudged the tolls, or, if he did, he only exercised the Englishman's privilege of grumbling.

The man who struck the first blow at turnpikes, toll-bridges, and self-supporting lines of road,—that is to say, roads exclusively maintained at the cost of those who used them,—was George Stephenson. Let us not forget that. The rapid change both in concentration of population and in activity of travelling which has marked the past forty years, is due mainly to the impetus given by railways. In clearing away any remaining barrier we are but carrying out the minor requisites of the new system. We act wisely in so doing; but we must not forget that it is the railway, rather than the road, which has become the main channel of our arterial communications.

DRAWINGS BY THE OLD MASTERS IN PARIS.

THE Parisian artistic body has, for the first time this season, introduced two innovations from the banks of our own Thames to those of the Seine,—an exhibition of privately-owned drawings by the old masters, and an exhibition of water-colour drawings. Strange as it may seem, in Paris, no annual exhibition devoted exclusively either to water-colour drawings or to drawings by the old masters has, till now, been organised. The special exhibitions devoted to the sketches by Ingres, Prud'hon, and Regnault aroused at the time great interest, exhibited as they were by the side of the finished conceptions of those favourite artists. But the means of comparison that it was then placed within the power of the observant critic to make, a comparison in which too often the picture stood but poorly beside the painter's original production,—led to no expressed desire to see any collection of studies by the old masters,—so many treasures by whose hands were known to be shut up in private portfolios.

And now from the initiative of our own Royal Academy and the Grosvenor Gallery, a few private individuals have organised this season an exhibition of drawings by the old masters, held in that interesting room of the *École des Beaux Arts* where each year are shown, as they have been for so many years, the ten pictures from which one is chosen as meriting the famous *Prix de Rome*. And no little justifiable pride do the Parisians take in their new exhibition; but may we not be allowed to differ from that most competent but amusingly self-satisfied French art-critic, M. Burty, when, in speaking of the Grosvenor Gallery and the Royal Academy collections without having, however, seen either, in comparison with this, he remarks that "they were neither as well chosen nor so varied as is that of the Beaux Arts, the remembrance of which will take long to pass away, and which before its close will attract to Paris all the great art-lovers of Europe"?

It is more than likely, from the accounts which will reach abroad, that many *dilettanti* will visit Paris expressly for this interesting exhibition, but none the less the Parisians, the first charm of novelty worn off, do not crowd, as they do the Hôtel Drouot, the classic rooms of the École des Beaux Arts, notwithstanding the efforts made by M. Charles Ephrussi and M. Gustave Dreyfus to make up their exhibition from the collections of the Duc d'Aumale, M. Gatteaux, and MM. de Goncourt among many others, and even from England by the aid of Mr. Malcolm and Mr. Mitchell.

It is not be wondered at that the selection of drawings by the old masters attracts so little attention, when we consider that day by day for so many years the extensive collection of drawings by the old masters at the Louvre has become, more or less, but very much too little, familiar to the Parisians.

We remember announcing in these pages, about two years since, that the Duc d'Aumale intended to exhibit in Paris his costly collection of drawings then lately arrived from England; but at the time the report was contradicted, and now that these drawings have at last been brought together, the exhibition cannot but suffer from its following so soon after the magnificent displays at the Royal Academy and the Grosvenor Gallery. Notwithstanding the very great value that may fairly be attached to a certain proportion of the drawings exhibited, it is impossible to accept in all its force the very high praise bestowed upon the collection by the Parisian art-critics.

Without doubt the main interest of the exhibition is divided between the collection of 170 and more drawings furnished by the Duc d'Aumale, and by the sixty or eighty drawings contributed by Mr. Malcolm and Mr. Mitchell, and it must be owned that never before have works of art been so enhanced by the beautifying aid of the mounter. We cannot think that the French critic is quite sincere in believing that this exhibition is really likely, as he states, to attract the whole artistic world to Paris this cold spring to see a collection which, after all, comparing it with the superb collection of the Louvre, is deficient in every school represented. So much so is this the case that, inconceivable as it may seem, notwithstanding that England has contributed so many valuable Italian and other drawings to the collection, only three drawings by English masters, and those three more than doubtful, occupy any place on the walls of the Beaux Arts.

But, stranger still, although Frenchmen are willing in the present day to claim the eighteenth century as the most typical French century of their history, and that they are now fully alive to the glories of their art at that period, glories which were not recognised twenty years ago, and the appreciation of which is almost due to the collection bequeathed to the nation by M. Lacaze, in 1869, the directors of the present Exhibition have failed to bring together anything like a complete series of examples of their own masters,—a series admirably represented on the walls of the Louvre, and at a time when literally every print-shop in Paris is filled with etchings, coloured aquatints, and engravings of the eighteenth century.

Without going out of Paris, without more trouble than crossing the Pont des Arts to the Louvre opposite to make comparisons, it is impossible not to admit that the national collection possesses finer examples of nearly every artist of the Italian and Flemish schools represented in the collection of the Duc d'Aumale; and notwithstanding that there has been a praiseworthy effort to fill up every gap from the first drawings by Giotto and Van Eyck to the last works of Prud'hon, it cannot but be admitted that there are some sad omissions, and not a few drawings the authenticity of which may be doubted. However instructive and interesting it may be to a few critics and *dilettanti* to compare and to doubt, to inquire into and to discuss the various peculiarities of the masters, and to show why or why not a drawing may or may not be an original, the public who visit such an exhibition are scarcely advantaged by the time spent there, unless they can be induced to feel perfect confidence that they are bestowing their admiration on thoroughly undoubted and authentic works. When this is the case, when studies by great masters are exhibited, the work is certain to be beautiful, and must prove to be of the utmost value for purposes of study.

It is scarcely desirable, for instance, that of the three Giottos exhibited, the two belonging to the Duc d'Aumale should be placed in such painful juxtaposition with the lovely Giotto belonging to M. Galichon, unless the object be to show the uninstructed the difference between the work of a great master and that of a doubtful imitator. We would like to see in such a collection as this purports to be a much more rigorous exclusion of questionable work.

The Pinturicchios at the Louvre are far superior to those exhibited at the Beaux Arts; it would be difficult also to exceed in beauty the Filippo Lippis of the national collection. There is no example in the Duc d'Aumale's collection by Taddeo Gaddi, but in the Louvre may be seen a magnificent study; while the drawings by Lorenzo da Credi in the national collection are of much higher interest than those exhibiting at the Beaux Arts.

Mr. Morris Moore's gift to the Louvre of the beautiful drawing by Signorelli is superior to any of the three drawings at the Beaux Arts; and the magnificent Andrea Mantegna shaded in bistre, of the Louvre, is as interesting as any of the great master's completed works at Padua or at Mantua.

Beautiful as are the two Fra Angelicas of the Duc d'Aumale, they are surpassed in interest by that of the Louvre; while the superb silver-point drawings on red paper by Verrochio in the national collection could scarcely be surpassed in beauty.

Of Verrochio's famous pupil, Leonardo da Vinci, the effectively-framed chalk head at the Beaux Arts is, after all, but a weak production in comparison with the interesting study at the Louvre, bearing, as it does, the traces of the master's hand, both in the work and in the carefully-pricked outline followed, to transfer it to its now lost panel. Of course, we have one of that interminable series of caricatures which so resemble each other, as also a fine series of studies, on one piece of paper, for the battle of Anghiari: a sketch, it may be mentioned, which bears the familiar initials of Sir Thomas Lawrence. As for the careful study in tempera by Leonardo, of a piece of drapery,—a study familiar to every artist,—it is unfair to expect out of the Louvre any rival to its beauty as a proof of the great master's painful desire to attain perfection.

When we reach the drawings by Michelangelo, of which there are some thirteen at the Beaux Arts, it is impossible not to compare them with those in the national collection of the Louvre, so numerous and so instructive that one is disposed to believe that old Jabach, the original collector (who obtained so many rarities from our shores at King Charles's sale), must have come by some means or other into possession of the identical package of sketches which a story tells us the great master begged his father to *very* carefully pack and send to him from home. Of the most beautiful specimens of Michelangelo's works here in Paris at the Beaux Arts, it is almost needless to speak, they are in the possession of Mr. Malcolm, and have been already exhibited at the Grosvenor Gallery. One not familiar to the British public appears to be the first idea of the "Slaves" for the tomb of Julius II., and another may possibly be a study for the noble figure of the "David."

Mr. Malcolm and the Duc d'Aumale share the Fra Bartolommeos, more than one of the drawings having previously passed through the hands, as can be seen by their private marks, of Reynolds and Lawrence. It is again the Duc d'Aumale and Mr. Malcolm who own the more precious Andrea del Sartos, though none of the drawings equal in interest the small and perfect study (in red chalk) at the Louvre for the St. Joseph of the famous "Holy Family *del Sacco*." A familiar sketch, lent by that most conscientious of all art-workers, Signor Castellani, shows us one of Benvenuto Cellini's studies for the Perseus of the *Loggia* at Florence.

Again, with some few exceptions, it is Mr. Malcolm and the Duc d'Aumale who share the Raffaelle drawings, so many of which are familiar to the London public. It would, indeed, be difficult to "discover" any drawing by that master not familiar, thanks to *fac-similes*, and in more modern times to photography; but few drawings at the Beaux Arts equal in interest the original sketch at the Louvre for the St. Catherine we prize so highly in our National Gallery. An additional interest is added to many of these sketches from their bearing the private marks of more than one famous English collector.

It is no little disappointment not to find a single study by Vasari at the Beaux Arts. It is true they are but rarely to be met with. M. Gatteaux, whose name figures in this collec-

tion so largely, presented to the Louvre, only a few years ago, a beautiful drawing by the interesting author of the immortal "Lives of the Painters." Nor is Bernini represented, though the national collection of the Louvre shows us that more than one drawing by that master is in existence.

Federigo Zucchero, of English reputation, again, is but poorly represented in one small sketch, the study for a portrait of Michelangelo; while at the Louvre there are a number of his interesting studies for portraits. Two drawings by Primaticcio (one, by the way, from Sir Thomas Lawrence's collection) represent the master whom Francis I. so liberally employed at Fontainebleau, where his work may still be admired. Here, again, the Louvre collection far surpasses that of the Beaux Arts in a series of beautiful studies for the ceilings and decorations of that palace. A chalk drawing, a portrait, serves to recall the lovely work of Luini, so impossible to really appreciate out of Milan. As for the Correggios, with one or two exceptions, they have all belonged to famous English collectors, and still are in the hands of Mr. Malcolm; the names and marks of Earl Arundel, Reynolds, Lawrence, and Woodburn, leaving no doubt, were that possible, of the authenticity of these treasures.

In the Venetian school, Mantegna takes no small part. Two excessively rare and valuable drawings, in the possession of Mr. Malcolm, represent that early Italian engraver, Nicoletto da Modena; while the Bellinis are not ill-represented, thanks again to Mr. Malcolm and the Duc d'Aumale; one Giovanni Bellini, is an "Annunciation," a superb specimen of early work in water colour. Though well represented in the Louvre, Pordenone finds no place at the Beaux Arts.

Mr. Malcolm's landscape, by Domenico Campagnola, is indeed a rare treasure, possessing an artistic interest more than usual, when we consider the friendship that so long existed between Campagnola and Titian, whose pen-and-ink sketches strikingly resemble each other; another drawing, by Giulio Campagnola, is equally rare and interesting. In drawings by Titian himself, again, it is the Duc d'Aumale and Mr. Malcolm who send the most beautiful examples, most of which are familiar in England, where for so many years they have reposed; but few of these sketches, unless it be that for a portion of the, alas! now no longer existing "Peter Martyr,"—lent by Mr. Malcolm,—can be said to surpass the superb sketch in red chalk, by Titian, preserved among many others at the Louvre, and representing a man holding a halberd, a sketch placed next the carefully-laboured study of drapery by Leonardo to which we have already referred.

And so on, one may pass through all the Italian schools, Mr. Malcolm, the Duc d'Aumale, with one or two other collectors, having contributed all the choicer examples, and still on through the Spanish school. Two interesting sketches, by Velasquez, are contributed by Mr. Malcolm; but even these can scarcely compare with the priceless sketch treasured at the Louvre,—where it is but ill-seen, unfortunately, —for a portion of the famous "Peace of Breda," a sketch, slight as it is, showing, in spite of its rapidity, all the courtly action of the two generals so admirably carried out in the completed picture. Enough, however, for the present.

Paris.

Stained Glass.—A window has just been placed in the east end of Crich Church, by Messrs. Camm Bros., of Frederick-street, Birmingham. The figures of our Lord and the four Evangelists are under canopies, placed on a grisaille ground, surrounded by a border. The window is a very large one. This with a reredos and one of the south windows of the chancel, executed by the same firm, are the gifts of the Misses Hurt, of Chase Cliffe, Derby. The Chawner memorial, also an effective stained-glass window, by Messrs. Camm, containing a figure of our Lord (Rev. iii), "Behold, I stand at the door and knock," with the following inscription: "This window was placed here December, 1878, by the parishioners and family of the Rev. Wm. Chawner, B.A. Cantab., vicar of this parish, in memory of a faithful ministry extending over a period of twenty years. Born 1817; died 1877." Two other windows, by the same firm, were placed in this church last year, one containing the figures of Faith, Hope, and Charity, the other an ornamental window.

PERSONAL RECOLLECTIONS OF SIR G. GILBERT SCOTT.

MANY years ago, the late Sir Gilbert Scott commenced noting his personal and professional Recollections, at first merely for the information of his family, but later on in life with a view to the public, and in 1873 drew up directions for the publication of them in the event of his death. These instructions, which were very precise, his son, Mr. G. Gilbert Scott, has followed, omitting such matter as he thought unsuited to publication.* The Dean of Chichester, the Very Rev. John William Burgon, B.D., has added a short appreciative introduction; and an account of Sir Gilbert's last days, a portion of Mr. Edward M. Barry's lecture before the Royal Academy in January last (published by us at the time), the Dean of Westminster's Funeral Sermon, and some papers by Sir Gilbert in reply to attacks made on him by disciples of the "do-nothing theory," as he calls them, at the Institute of Architects and elsewhere, in respect of his treatment of ancient buildings,—attacks which, as we have reason to know, pained him greatly, are added as appendices. We shall give general consideration to the book hereafter. On the present occasion we confine ourselves to a few of his observations and opinions on one or two special matters. For example, in giving instances of the intolerance of the earlier revivalists, he says, speaking of the first occasion on which it was attempted to set aside the Ecclesiological Society's law as to the constant use of the "Middle Pointed,"—"The ecclesiologists had actually at one time doubted whether it would not be right to pull down Peterborough Cathedral, if only we could rebuild it equally well in the 'Middle Pointed' style; and now they were forced to swallow a veritable 'First Pointed' design, and to sing its unwilling praises. Clutton and Burges certainly had the credit of overthrowing the old tyranny, and even some of its most rigorous abettors soon found it necessary to outvie each other in setting at nought their former faith, and in trying who could be the *earliest* in the style of their buildings. One thing, however, never changed: the intolerance shown by them for all freedom of thought on the part of other men. Every one must perforce follow in their wake, no matter how often they changed, or how entirely they reversed their own previous views. Nor was anything more certain than this, that however erroneous their former opinion might have been, their views for the time being were right, and that every one who differed from them was a heretic or an old-fashioned simpleton. It had many years before been a saying of mine, that there was no class of men whom the Cambridge Camden Society held in such scorn as those who adhered to their own last opinion but one: and this sentiment has been the great inheritance and heirloom of their imitators."

Scott did not object to an earnest belief in the particular phase in vogue. What he did protest against was the custom of taking the cue from some self-elevated leader of their own, and, whatever the circumstances might be, treating with pitying scorn every one who did not chance to fall in with the new rule or opinion; even those who had no power of art in them setting themselves up as lights, because of their adhesion to the latest dictum of the clique, and those of a superior class neglecting often their own special training, in the intensity of their self-satisfaction at belonging to the privileged party whose great moral rule was to trust in themselves and to despise others.

The account of his struggle as to the designs for the Public Offices is a painful chapter, and will lead, probably, to discussion; but we cannot touch it now. We take, at hazard, a few passages, showing the opinion Scott had of the competing designs for the New Law Courts.

"I do not know," he says, "that my general architectural design was of much merit, though I think that it was fully as good as any recent work I know of by any other architect. Of its parts I am bold to say that many exceeded in merit anything that I know of among modern designs. I say this especially of the portico towards the Strand, of the internal cloister, and of the domed central hall; nor were other parts devoid of merit, but I refer to the drawings (some of which, by the way, were spoiled and vulgarised by bad colouring, through which much exquisite outline drawing was unhappily ruined). The two surveyor-assessors awarded the greatest number of marks to Mr. Edward Barry, and the second greatest number to myself, while the heads of law offices awarded the greatest number to me, and the second to Mr. Waterhouse. The competition judges, wishing to follow the advice of the assessors (now added to their own number), desired to give their verdict in favour of Mr. Barry, but as his architecture was approved of by no one, they conceived the idea of linking on to him some other architect, in whose architectural powers they had more confidence, and they pitched upon Mr. Street, whose arrangements no one had ever spoken in favour of. I at once protested against this as a palpable departure from the conditions, which were not to take the sum of two men's merits and balance this aggregate against the single merits of others, but to weigh each man's merits one against another. Mr. Street complained of my protest, and I then wrote to the Government, stating that if the judges reaffirmed their decision, I should abide by it. They did very unjustly reaffirm it, but the law officers of the Crown cancelled their decision as unfair. As, however, I had engaged to stand by the reconsidered verdict of the judges, I felt bound to adhere to my promise, and I withdrew from the competition; though I was vain enough to feel convinced that my merits (architecture and plan together) were greater than those of any other competitor,—an opinion to which I still adhere. Mr. Waterhouse was, perhaps, the closest rival, but Mr. Street had but a poor plan, while his architecture was unworthy of his talent, and had evidently been very much hurried; while Mr. Burges, though his architecture exceeded in merit that of any other competitor, was nevertheless eccentric and wild in his treatment of it, and his plan was nothing. Laughably enough, the competition ended in Barry, who had been buoyed up by Street's architecture, being cut adrift, and Street, who had only come in under Barry's wing, being declared the winner."

Sir Gilbert considered that this great competition as a conspicuous non-success did him much harm, and he had then begun to feel that he had rendered himself unpopular with his own party through giving way in respect of the style of the Government Offices. We have said enough for the present to show the character of the book. We will simply add that we note with regret the absence of any reference to some who well helped him at different times in the course of his career.

* Personal and Professional Recollections by the late Sir Gilbert Scott, R.A. Edited by his Son, G. Gilbert Scott, F.S.A. Sampson Low & Co. 1879.

THE HOUSE OF LORDS AND LONDON FIRES.

"IT is," says the proverb, "an ill wind that blows nobody any good"; and the ill wind which brought a fire to Lord Granville's house has in all probability blown not a little good to the householders of the metropolis. Indeed, the fact that, moved by the fire in his own house, Lord Granville has brought forward in the House of Lords the question of fires in London houses causes a certain feeling of regret that, however unfortunate for the aggrieved persons, some more noble lords cannot be injured or made uncomfortable in property or person: we should like to find Lord Derby compelled to sit out a play at a theatre we could name, and Lord Carnarvon with a first-class ticket sitting between a costermonger and a sweep in an evening train on the Metropolitan Railway. However, it is satisfactory to find that Lord Granville has given his attention to this subject of London fires; but we regret at the same time that he did not make some practical effort towards attaining the object which is so desirable, the larger safety of London householders from fire; for it must be borne in mind that since 1846 committees and commissions have been making reports on this subject, all more or less with the same result, namely, the urging of improvements without any practical result following.

The committee of 1877 brought forward twelve proposals, six of which were, so to speak, connected with the principle of the extinguishment of London fires; but these six are no nearer fulfilment now than they were eighteen months ago.

But when Lord Granville based his appeal to the Government to commence legislation on the basis of the report of the last committee, he, as it seems to us, did not point out that the proposals are severable. For the first three deal with the constitution and management of

the *personnel* required to extinguish fires, the two last with the subject of the water-supply; and it seems to us that while it is desirable that legislation should take place on all these points, it is yet possible that it may effectually be taken in hand first of all on the first three points. The first point was that the Fire Brigade should be transferred from the Metropolitan Board to the Commissioner of Police, to be placed under the immediate command of a separate Assistant Commissioner. The second was that the police-stations and the fixed points should be used as fire-brigade stations, or as places where small engines or other appliances should be deposited, and that the police should be auxiliary to the fire brigade. The third point embraces both the question of water and of the *personnel*, for it is in effect that consolidation of management should take place in regard both to the water and the men.

Now it is evident that such points as the increase in the numbers of the fire brigade, the more effectual aid of the police, and the general management of the force, can be accomplished without going necessarily into the question of the water supply. It is on Captain Shaw's authority that if two great fires were to break out simultaneously in London the force at his command is too small to quell them both. The unpleasant difference between the brigades of London and Paris, namely, that in this metropolis we have 406 firemen to a population of 3,500,000, whereas in Paris there are 1,540 firemen to a population of 2,000,000, is capable of being remedied without touching upon the question of the water supply with which the replies of the members of the Government almost wholly dealt. Therefore it is that we hope Lord Granville and Lord Camperdown will first of all endeavour to remedy this part of the question, and so give us a half if we cannot have the whole loaf of bread which the last committee has recommended.

For it is obvious, when we come to the question of the water division of the subject, that it is part and parcel of the whole question of the water supply of London; and that, again, is intimately connected with the question of the Local Government of London. It is all very well to point out, as Earl Fortescue did, the high state of efficiency, especially in regard to the supply of water, which Manchester exhibits, where the water supply is managed, not by private companies, but by the corporation. But it must be remembered that London differs radically from all the great provincial towns. If this metropolis were the size of Liverpool or Leeds, governed like them by a corporate body representative of the ratepayers, reflecting their wishes, directly amenable to public opinion, and consisting of the best men of business of the town, there would be no difficulty in transferring the management of the water supply to this body. But, on the contrary, London is chopped up into districts; the Metropolitan Board of Works is not a really representative body; the vestries of London are not representative; and the best business talent of the metropolis is conspicuously absent from these bodies. This is, in fact, the great difficulty: in whom is the management of the water supply to be vested? As at present constituted, we should not wish to see it in the hands of the Board of Works; and therefore, until the local government of London is wholly changed, should the water supply be managed by the public, some kind of elective metropolitan committee must be the body to which it should be entrusted. And it was on this point that the debate of last week was somewhat feeble, for the speakers did not grapple with this supreme difficulty. The Government speakers uttered, as might be expected from officials burdened with two wars, a drooping exchequer, and an impending general election, a weak *non possumus*. The lords who urged the necessity of immediate reform neglected to grapple with the difficulties which beset the carrying out of the recommendations of the last committee. Therefore, we repeat, that as things now exist the *personnel* of the fire brigade must be first dealt with. Then, apart from that, the water-supply of the metropolis must be considered, either as part of a great scheme for the better governing of this metropolis, or by itself; and if dealt with by itself, the first question which Lord Camperdown proposes to touch upon in a resolution is what is to be the body to control the water supply of London? The taking over the rights of the companies is, after all, a simple matter; it is no more difficult than taking over the powers of the telegraph companies. In this respect Lord Camperdown was correct; but when he stated that, "of course, it would be necessary to have a central authority which would command the confidence of the ratepayers, and surely the Home Secretary was competent to create such an authority," we fear that he weighed too lightly the difficulties standing in the way, and looks upon the Home Secretary too much in the light of a divinity capable, like Hercules, of sweeping out Augean stables. At the same time, difficulties should not appal a Legislature composed of men of business such as sit in our Parliament, and therefore we very much hope that careful thought will be given to this latter part of the question, and that meanwhile the points connected with the efficacy of the fire brigade and the co-operation of the police will be legislatively dealt with. Everyone connected with houses and buildings in London is interested in this matter, and we shall be much disappointed if the fire at Lord Granville's produces nothing more substantial than the debate of May 23rd.

FROM PARIS.

AT the same moment that in England the vexed question of our Sunday's "rest" is attracting attention, the French Chamber has been called upon to consider the necessity for the abolition of an old law passed more than sixty years ago, and now entirely unobserved, obliging all work to be suspended and all shops to be shut on the Sabbath. To the mass, the existence of the law was unknown, and its revocation is a mere formality. Paris, indeed, in spite of Napoleon's English efforts, still offers on the day of rest an appearance very different from that of the British capital. Among the many museums which are so generously thrown open on that day, few are more interesting than the Hôtel Drouot, where, on the Sunday afternoons, are held private views in each of the rooms, of the principal sales to take place during the week. The Sunday before last, after having delighted the eyes of the London public at Mr. Quaritch's for a few short days, some of the choicest rarities of M. Firmin-Didot's collection, or rather the second portion of his gathered treasures, were exhibited previous to the sale, which occupied the whole of last week; and treasures indeed they were, which are now dispersed to the four winds,—rare illuminated MSS. and early-printed books and choice old bindings, more than one of which had passed through the library of that prince of bibliopoles, Francis I.'s minister Grolier, together with not a few modern bright backs, the work of Capé, Lortic, Trautz-Bauzonet, Hardy, Duru, and other familiar French binders. As might be imagined, the bibliopoles of half the globe were represented in Paris last week, all being engaged in scoring their bulky, green-backed catalogues, on the margins of which not a few high prices were marked.

The whole 525 volumes produced a total of some 955,000 francs (38,200*l.*). Among the highest prices given may be mentioned a fifteenth-century MS. Bible, adjudged at 400*l.*; a volume of Psalms at 100*l.*; a fragment of an *Évangélaire* on vellum, executed at the abbey of Luxeuil in the middle of the eleventh century, 600*l.*; a Commentary of Beatus, of the twelfth century, 1,220*l.*; the Comte de Bussy-Rabutin's Book of Hours, 1,040*l.*; and a volume of some forty-four original drawings by Hans Holbein, 800*l.* But the choicest treasure reached no less than 76,000 francs, with the per-centage (which here in France is charged to the purchaser), some 80,000 francs, or 3,200*l.* It was the Missal of Charles VI., in folio, of some 364 sheets, with wooden backs covered with velvet, and corners and clasps in chiselled silver. It is a truly marvellous and historical manuscript, on vellum, executed at the beginning of the fifteenth century for Charles VI., and which in later years passed to his daughter Catherine, the wife of our own Henry V. The volume in its beauty and rarity is unique, few MSS. being so profusely illustrated: it contains more than 500 illuminated pictures, exclusive of the innumerable borders and superb initial letters. Report states that this precious treasure was purchased for the Duc d'Aumale: whoever the purchaser may be, enormous as the sum may appear, the owner of this fifteenth-century Missal possesses a beautiful gallery of more than 500 pictures, such as can never again be produced; and such a picture-gallery at 3,000*l.* is, after all, not extravagant. The literary world has not yet heard the last of M. Firmin-Didot and his superb collection, which has already brought in to the family several millions of francs; other sales are announced for next season.

While every day the eighteenth century is growing in favour with the Parisian public, and the trade sales at the Hôtel Drouot are industriously supplying feverish collectors with eighteenth-century engravings, eighteenth-century furniture, and eighteenth-century decorations generally, it is not a little interesting to hear that Mdlle. Adelaide de Montgolfier, the daughter of the famous inventor of the balloon, has recently presented to the museum of the Académie d'Aérostation of Paris the portraits of her father and uncle, Étienne and Joseph de Montgolfier, the work of the eminent sculptor Houdon. The age of Montgolfier's daughter is unfortunately not mentioned. When we consider the early commencements of Stephenson and the steam-engine, and how long ago those efforts were made, it is not a little startling to learn of the existence of the daughter of the inventor of Montgolfier's balloon, whose experiments preceded by so many years those of Stephenson. We are carried back to the "ante-diluvian" epoch of Louis Seize in a reminiscence of Montgolfier and his balloon.

The announcement of the death of M. Anspach, the worthy *bourgmestre* of Brussels, has caused not a little feeling even in Paris. In Brussels itself, the public sympathy was manifested in a marked manner; the public offices, the Chamber and Senate, the Courts of Justice, and the Bourse were closed, and the houses were hung with mourning flags. In the funeral procession the whole ministry and the diplomatic body were present, with an immense number of civic and military functionaries. Burgomaster Anspach was truly loved by the Bruxellois, and nothing shows more the respect of the people for his memory and gratitude for the good he during his too short life worked for his native city than the spontaneous mourning exhibited for him by the whole of Brussels. Those who may remember the gay little capital a generation since, and know the Brussels of to-day, may be grateful to Burgomaster Anspach for the favourable comparison which the modern capital is able to make with the old, if not in its quaint picturesqueness, at least in its increased supply of those greatest necessities of life,—air, light, and water. The determination taken by the municipal council henceforth to name the grand new Boulevard Central after their late respected burgomaster is to be commended.

From all appearances, there is every prospect of the Hôtel de Ville of Paris being at length freed from its case of bewildering scaffolding. At the last meeting of the municipal council, a councillor requested from the director of the works a statement of the progress of the rebuilding. Competed for in 1872, it was only in 1873 that the plans of MM. Ballu and De Perthes were adopted, and the total expense was then stated at fifteen millions of francs, some 600,000*l.* Since then, several modifications have been made which have entailed further expense, and it was in consequence of these changes from the original plan that a delay ensued. For the last fifteen months the greatest activity has reigned in the progress of the works. On the 19th of May last, no fewer than 1,098 workmen were engaged; from the 1st of January to the 15th of May, 70,000 workmen's days' pay had been expended; but owing to the nature of the building, the number of workmen has been obliged to be restricted. Difficulties have been met with in obtaining the stone from the Yonne; the hard winter from which we have suffered as much in France as anywhere, has ruined the roads, and the supply of material has thus been seriously checked. Notwithstanding these difficulties, the architects promise that by July the masonry will be completed as far as the cornice, in 1880 the roof and rough-casting will be completed, and at the beginning of 1881 the municipal council and the bureaux may take possession again of their old home. With regard to the preparation and decoration of the private rooms of the Prefect of the Seine, it is agreed that this point shall, for a time at least, be put off. Nothing, so far, shows that the sum of 22,000,000 francs (880,000*l.*) will be insufficient, and this is the amount voted by the council; but the sum to be expended on the statues and other works of art is still under discussion. The council, by a resolution, invited the Administration to lay

before the municipal council at the opening of each of the August and February sessions, a report on the state of the works. Unless unforeseen accidents occur, it is confidently expected that the inauguration of the new Hôtel de Ville will take place in 1881. Thus one more trace of the terrible reign of the Communists will disappear, leaving only the picturesque ruins of the Tuileries, and the Palais of the Quai d'Orsay.

On Friday evening, the 30th of May, with the performance of "Ruy Blas," the dramatic masterpiece of the veteran Victor Hugo, who in a few short days is to preside over the International Literary Congress in London, the Comédie Française took their leave, for a time, of the Parisian public, and much do we exiles envy our more fortunate brethren at home the presence of these delightful *artistes* in London society. The Literary Congress will have the advantage of two Italian opera companies and the French Comédie, not to speak of many invitations, where, if report speaks true, it will not be rare to enjoy the undoubted powers of the attractive Mdlle. Sarah Bernhardt, who, we hear (according to the French papers, "under the direction of Sir Benedict" [*sic*]), proposes to give dramatic readings.

NORTHERN COAL TRADE ARBITRATIONS.

In no branch of our industries has arbitration in wages disputes a fairer field for exercise than in the coal trade, for the price of coal is easily ascertainable at the mouth of the pit, and the decision as to the portion of the selling price that labour should receive is not complicated as in some other industries, where the value of the product of labour is varied according to the uses of the product, and where the destination, the class, and other qualifying circumstances affect the value. But in the Northern coal trade, arbitration in wages disputes was not early introduced, the old "yearly bond" having lingered till the present decade. When, however, the coal trade entered upon the extraordinary phase of inflation, and the demand for fuel became intense, especially for metallurgical purposes, it was deemed desirable that steps should be taken to secure, as far as possible, uninterrupted working of the collieries. When the market was improving and coal went up with bounds in price, it was tolerably easy to award increased wages, and from 1871 to 1873 a series of such increases were given. Local increases were at first the rule, settled at each colliery between the coalowners and the men; but these were included in the first general advance, and thus it is easy to trace the extent of the general increase in the county of Durham. Steps were taken to ascertain a "county average" price of coal,—a price, that is, obtained from such a number of collieries in different positions and sections of the trade as to make the price a fair average to adjust wages to. That average price for coal may be given, with the amount of the gross increase in wages during the three years of prosperity and of rising prices, as follows:—

Price of Coal and Increase of Wages.

	s.	d.	
Coal, 1871	5	2	per ton.
Coal, 1873	15	10	,,
Increase	10	8	

Increase of wages, in three advances, 58 per cent.

The three advances in the rate of wages were awarded by mutual arrangement between the coalowners and the miners; and whilst the miners have contended, and the figures above show, that the increase, in the total, was not proportionate to the increase in the price of coal, the employers advance proof to show that there had been a more than equal advance in other items of the cost of production, that the miners' output was on the average lessened, and that thus the heavy establishment charges were spread over a lesser area, whilst the working of the Mines Regulation Act added to the cost. Moreover, they show that whilst the miners had the highest rate of wages for fourteen months, long before that time the price of coal had receded from its maximum,—it having fallen off three shillings per ton before wages were lowered.

In 1874, when the downward tendency in the coal trade was a settled one, the first reduction was arrived at by mutual arrangement, but after that a series of arbitrations were needed to determine the extent of the various reductions claimed. Mr. Russell Gurney, M.P., Mr. W. E. Forster, M.P., Mr. C. H. Hopwood, M.P., and Mr. J. G. Shaw-Lefevre, M.P., were the adjudicators, and by their award prices were brought down, with the previous reduction, fifty per cent. The last of these was in August, 1876, and in the spring of the following year, a "sliding scale" arrangement was entered into, which was inaugurated by a reduction of 7½ per cent., so that wages were brought down to the level from which they started in 1871,—these reductions being invariably preceded by ascertained reductions in the average price realised at the pits for coal. Put into a tabular form, we have now the following as the outline of the effect of the rise and fall of the demand for Durham coal on prices and on wages during the six years:—

	Per ton.	Per cent.
Price of coal, 1871...	5s. 2d.	
Price of coal, 1873...	15s. 10d.	= Increase of wages = 58.
Price of coal. 1877...	5s. 3d.	= Decrease of wages = 58.

In 1877 the sliding scale was brought into operation, but it was fettered,—that is to say, there was a general belief that the lowest price of coal had been reached, and the scale made provision only for an increase, not for a decrease in price. Thus, whilst, contrary to expectation, the price of coal has further fallen,—from 5s. 3d. per ton to 4s. 8d. in the two years,—there has been no corresponding fall in the rate of wages. It has been the contention of the representatives of the mines that in the years of prosperity they received only a portion of the increase in wages to which the higher prices of coal entitled them, and that therefore any excess paid in the later months of the sliding scale's operation was merely a counterbalance. But the owners retort that, from causes previously glanced at, the increase in the total cost of production was more than in a ratio with that of the increased price of coal; that owing to the shortened hours of labour, more men have been necessary and more houses (which are freely provided for miners by the owners); that increase of rates and many other such items make the wages paid much higher than the apparently equal ones of eight years ago. In additional houses needed for workmen to keep up the output of coal, it is estimated that capital to the extent of 500,000*l.* has been invested; and in other methods the coal-owners contend that they are entitled to an abatement in their wages. Nor was this denied by the workmen, and hence the strike might have been averted had any agreement been possible as to the amount of the reduction. The provisional reduction which has been made has more than passed the extent which the miners deemed they should submit to, but it has not come up to that which the owners claim. Hence the desire for a further reduction by the employers, and the reference to arbitration of the balance of the employers' demand. That arbitration will be a full one,—full and open,—conducted on the part of the coalowners by two of their number, and, on the part of the miners, probably by two of their leading officials; and although the primary reason for the decision of the umpire will probably be the selling price of coal, yet many other matters will influence that decision. In previous arbitrations the comparative output of the men, the standing charges of the collieries, the production and rate of wages in other districts, and the comparative purchasing power of money, have all been taken into account, and in some measure have influenced the decision of the umpire, in all probability. It is too soon to forecast the result of the coming arbitration; but it may be fairly said that, unless the coalowners had strong grounds for a reduction they would be unlikely to disturb the present settlement; and that, in the interest of both parties, it would be well if the outcome were sufficient to enable the sliding scale to be again brought into practice free and unfettered in its operation. The cost of the strike to both parties must have been far more than the per-centage gained or lost; and, in addition, its results have been an embitterment such as will not readily be removed.

The Electric Light in France.—The French Minister of Finance has made an arrangement with the Société-Générale d'Électricité of Paris for lighting up the Salon in the Palais de l'Exposition, Champs Elysées, with 250 electric lights. This decision, it is understood, has been arrived at in consequence of the success attending the recent exhibition of the paintings in the École des Beaux Arts by means of artificial light.

THE LINCOLN, NORTHAMPTON, AND LEICESTER ARCHITECTURAL SOCIETIES AT STAMFORD.

On Wednesday and Thursday in last week the Lincoln, Northampton, and Leicester Architectural Societies held a joint meeting in Stamford. The visitors first inspected St. Mary's Church, where, as elsewhere throughout the town excursion, Mr. James Neale, F.S.A., gave the architectural descriptions, and the Rev. C. Nevinson (the local honorary secretary) supplied the historical details. Perhaps the most noticeable feature about the church is the fine Early English tower, with Decorated spire, added about the year 1300. In the body of the church there is work of the Early English, Decorated, and Perpendicular periods. St. Mary's Chapel, north of the chancel, has a rich cradle roof of timber, coloured and powdered with stars, the ornamentation being performed at the cost of William Hickman, alderman of Stamford, in 1467. In recesses of Decorated character in the north wall are two figures,—one a knight of the time of Edward III.; and on a rich altar tomb on the south side effigies generally considered to represent Sir David Phillips (who was attached to the house of Queen Margaret of York) and his wife. Attention was next devoted to the cellar of a house east of the chancel on St. Mary's Hill, which contains part of an Early English vaulting-shaft, with a well-moulded capital. The party next proceeded, under Mr. Nevinson's guidance, to view the site of the castle on the north side of the river. The first fortification is supposed to have been erected here by the Danes in 870, after they had destroyed the monasteries of Crowland and Peterborough; in 911, no longer able to keep possession, they demolished the work lest it should be turned to account by the English. From that time until the arrival of the Normans, the fortress changed hands with the varying fortunes of Dane and Saxon. It is known that in the reign of William the Conqueror a stone structure was raised, for Domesday Book mentions that "at the time of the survey five houses were waste on account of the building of the castle," and some of the Norman masonry remains to this day. During the reign of Richard III. the castle was destroyed, and the materials used in repairing the White Friary. Standing by the mill-stream an Early English postern may now be seen; and beyond it a portion of the Norman wall of the outer enclosure. The mound of the keep, doubtless in existence when the Norman castle was raised, is conspicuous. In the south-east corner of the enclosure is some fine arcading dating from the thirteenth or fourteenth century. The sites of St. Peter's Gate (dismantled 1770), Austin Friars (a religious house, founded in 1380 by Wm. Fleming, a merchant at Stamford), and the Church of St. Mary Bennewerk (burnt during the civil wars by Sir Andrew Trollope), with the tower and buttress of the time of Charles I. on the north side of St. Peter's-gate, and the fragments of Sempringham Hall on the north-east of King's Mill-lane, were next examined by the visitors. Sempringham Hall, it may be noted, was founded in 1292 by Robert Luttrell for students of the Gilbertine order. About this period there seemed a possibility of Stamford becoming a serious rival of the Universities of Oxford and Cambridge. When the students who had settled at Northampton retired from that town, some few preferred a withdrawal to Stamford, rather than a return to the old quarters at Oxford. The archæologists next proceeded to All Saints' Church, which is an excellent specimen of the Early English and Perpendicular styles. The lofty tower with spire (152 ft.) is of effective design (Perpendicular), but rather suffered from comparison with that of St. Mary's previously inspected. The rest of the church is mainly Early English, with insertions of later date. There is some very fine arcading below the windows of the exterior; and in the interior the beautiful foliage of the capitals is worthy of especial mention. Mr. Neale especially alluded to the restoration in 1857; and drew attention to the brasses to the Brownes, one of whom, William, paid for the building of the steeple, the windows, and the other Perpendicular portions of the edifice. Passing to St. John's, a small Perpendicular church of no special architectural interest, the visitors especially admired the rich oak wood screen, which Mr. Neale hoped would be speedily restored to its original position under the chancel arch. In the upper lights of the north aisle are considerable remains of very excellent stained glass; and it is stated by the

Northampton Herald (from which journal we condense this account) that in the beginning of the eighteenth century the church contained nearly 100 figures in Mediæval glass, all more or less mutilated. Leaving the church, the party went to Browne's Hospital, which is situated in Broad-street, and was erected in the reign of Edward VI., by William Brown, merchant, of Stamford, as "an almshouse for divers poor of each sex, as well as for chaplains to celebrate divine offices therein." Mr. Neale spoke in high terms of the ancient glass in the chapel and audit-room, representing various Scriptural subjects. A few minutes were next devoted to an inspection of some curious antique vaulting in one of the cellars of the Red Lion Inn (opposite St. Michael's Church), and of certain capitals in a house (opposite the Conduit) in St. Paul's-street, lately occupied by Mrs. Bishop. Mr. Neale placed the date of the last-mentioned work at 1200. The examination of the remains of St. Paul's Church (apparently built in the twelfth century), now forming part of the Grammar School, Brasenose-gate (remnant of Brasenose College, destroyed in 1668), and the entrances to the Grey and White Friars,—the former opposite Cherry Holtwood, and the latter forming the gateway of the infirmary lodge, led up to St. Leonard's Priory, which is said to have been founded by Wilfrith toward the middle of the seventh century. No part of the present fabric is, however, earlier than the eleventh century, when William the Conqueror and Carileph, Bishop of Durham, restored the monastery, and gave it to the prior and convent of Durham. The building now comprises the west end of the nave, with five arches of the north arcade and part of the clearstory. Mr. Neale pointed out the gradations of style as seen in the northern arcade and in the rich west end. The visitors wound up the morning excursion by visiting St. George's Church, originally an Early English edifice, but greatly injured by fire in the fourteenth century. It was rebuilt on the old foundations, and is certainly, on account of the remarkable adaptations, a most interesting study for the archæologist. At two o'clock some 200 ladies and gentlemen sat down to luncheon in the Assembly-rooms, under the presidency of the mayor (Mr. Thomas Gurney Mason). His worship was supported by the Earl of Gainsborough, Precentor Venables, Rev. C. Nevinson (local secretary), Mr. M. H. Bloxam (Rugby), and a representative body of the archæologists of the three counties. The programme for the afternoon presented the alternative of a journey to Burghley House, and an examination of St. Martin's Church on the return; or an excursion to Uffington and Barnack. The party divided into about two equal bodies, and both spent a very pleasant afternoon. Burghley House, with its manifold attractions, has been ofttimes described. On this occasion no set lecture was delivered; but the attractions of the mansion were explained by the attendants. The visitors spent a short time in inspecting St. Martin's Church. It is a fine example of the Perpendicular period, and possesses special interest on account of the Cecil monuments being placed here. The party that visited Uffington and Barnack was much interested in the examination of the village churches, that of Barnack being undoubtedly one of the most notable examples in the country of the earlier Romanesque, as developed in England before the Norman conquest.

In the evening a meeting was held in the Assembly-rooms, the Bishop of Lincoln presiding. The Bishop, in the course of his introductory remarks, advocated the establishment of a county museum.—The Rev. G. Ayliffe Poole, of Winwick, read a very interesting paper on "Fragments of Diocesan History in the time of Charles I. and Charles II.," in which he described the troubles of the clergy in the Peterborough diocese during those times of civil strife; Mr. Neale, F.S.A., of London, followed with a paper on "The Stamford Churches"; and the concluding paper was "Notes on the History of Stamford," read by the Rev. C. Nevinson. Numerous architectural drawings, and a collection of engravings, &c., lent by Mr. Neale, were inspected at the conclusion of the meeting.

The number of members and visitors was largely increased on Thursday. The programme of the day commenced with an excursion, about a hundred persons starting in a long line of conveyances from the Red Lion-square about half-past nine o'clock in the morning. The first place visited was Ketton, and the church, which is a fine and interesting building, ranging from Trans-Norman, through Early English, to First Decorated, was much admired. The party then proceeded to North Luffenham, and, after inspecting the church and other places of interest, went on to Edithweston and Exton. At the latter place the company were received and entertained at the Hall by the Earl of Gainsborough. After inspecting the house, the family portraits, and other objects of interest, the party repaired to Exton Church, in which there is an elaborate display of Harington and Noel monuments, which were described by the Rev. G. Knox, the vicar. The beauties of the church were described by the Bishop of Nottingham. The remains of the old hall (which was of Elizabethan style, and almost destroyed by fire in 1810) were also inspected. Empingham was the next village along the route, and whilst inspecting the church the Bishop of Nottingham remarked upon the great want of restoration, and hoped some steps would soon be taken respecting the carrying out of such a work. The last place visited on the return journey was Tickencote, where the party were entertained at tea by Mr. and Mrs. J. H. Lee Wingfield. After inspecting the hall and the Norman church, the company returned to Stamford, which was reached between five and six o'clock.

In the evening a second meeting was held at the Assembly-rooms, which was presided over by the Bishop Suffragan of Nottingham, who called attention to certain illustrations of frescoes hanging on the walls, which had been found in the course of the restoration of the parish church of Friskney, near Boston, and expressed the hope, as he considered they were of a very valuable character, they would be preserved. The Rev. Mackenzie E. C. Walcott, B.D., was announced to read a paper on "Cathedral Precincts," but, as he was unable to be present, it was read by the Rev. A. Pownall, of South Kilworth. The Rev. R. A. Cayley, of Scampton, also read an interesting paper on "The Lighting of Churches."

A COLLECTION OF REPORTED CASES RELATING TO ARCHITECTS, SURVEYORS, AND BUILDERS.*

BY E. S. ROSCOE, BARRISTER-AT-LAW.

PLANS AND DRAWINGS.

Plans.

A PERSON who invites tenders for work does not impliedly warrant the correctness of the plans or specifications according to which the work is to be done.—Thorn *v.* The Mayor and Commonalty of London, 12 L. R., App. Case, 120; 45 L. J., Ex. (H. of L.), 487 (1876).

[Neither is there an implied warranty, it would seem, by an architect, quantity surveyor, or engineer, that his plans are correct. But if one of these persons was proved not to have used reasonable care in the preparation of such plans, so that they were incorrect, and the employer suffered damage in consequence, then an action would be maintainable against such person for negligence and want of skill. Thus, in the case of Jenkins *v.* Betham, 15 C.B., 168 (1854), it was decided that one who holds himself out and is employed as a valuer of ecclesiastical property, is bound to bring to his task that ordinary degree of skill and knowledge which would reasonably be expected from country surveyors and valuers. Much less, therefore, is the house-owner liable either for the accuracy of the quantities furnished by the architect to the builder, as was attempted to be proved in the case of Scrivener *v.* Pask, 1 L. R., C. P., 715; 18 C. B., N. S., 785 (1865).]

WHEN an architect agrees to do certain work (laying out land for building purposes, and making surveys thereof), and to make no charge for such work, and it is further agreed that in certain events (if the land were disposed of for building purposes) he shall be appointed architect, or if his services are dispensed with, that he shall receive remuneration for the work primarily done, he is not, though he has done the primary work, entitled to make any charge unless the event agreed upon actually happens.—Moffat *v.* Laurie, 24 L. J., C. P., 56 (1855).

[It will be observed in this case that the land was not let for building purposes; hence there were no services of the architect to be dispensed with, the event after which the services could become possible never having taken place. It is an important case also, as showing how careful professional persons should be in doing work the payment for which is made contingent on the happening of certain events, which, though though they will very probably occur, are not certain to happen.]

Drawings.

WHEN an architect agrees to prepare probationary drawings for approval, and all the working drawings and specifications, he is not entitled to payment unless his drawings are approved.—Moffat *v.* Dickson, 13 C. B., 543; 22 L. J., C. P., 268 (1853).

Quantities.

WHEN a surveyor prepares bills of quantities, and notice is given that the contractor who successfully tenders for the work will have to pay the surveyor a certain per-centage for such bills of quantities, and the contractor who was eventually successful also agrees with the surveyor that his fees shall be paid out of the first instalment which he receives from the building-owner, there is an implied promise that the contractor, when his contract is accepted, will proceed with the work, and his obligation to pay the above-mentioned per-centage is established as soon as his tender is accepted.—McConnell *v.* Kilgallen, 2 Irish C. L. R., 119 (1878).

[The fact that the fees were to be paid out of the first instalment is not a further condition precedent to payment, in addition to the acceptance of the contractor's tender, but merely shows the manner in which the payment is to be made; so that as the payment could not be made in this form, owing to the contractor abandoning the work, his liability becomes absolute and unconditional as if no such secondary stipulation existed.]

ARCHITECTS have by custom an implied authority to employ surveyors to take out the quantities for buildings, the plans for the erection of which they have prepared.—Moon *v.* Guardians of Witney Union, 3 Bing., N. C., 814 (1837); Taylor *v.* Hall, 4 Irish L. R., C. L., 467 (1869).

[The above seems to be the result of these two cases; but it must always be remembered that such implied authority must be proved by the person who relies upon it, and that such proof may fail. Thus, in Taylor *v.* Hall, Morris, J., said:—"I am of opinion that there was no sufficient evidence of any such legal custom as that relied on by the plaintiff" (the surveyor); on the other hand, Monahan, C.J., considered that the architect has an implied authority to employ a surveyor. But it must also be remarked, in connexion with Moon *v.* Witney Union, that the fact that quantities were to be taken out by a surveyor had been communicated to the solicitor of the Union, and that when the architect sent in the bill of the surveyor with his own, the Union did not at once repudiate their liability. Both these facts weighed much with the Court.]

Tenders.

A TENDER by a builder, and an acceptance of such tender by a house-owner, constitute a binding contract, and the parties will be bound by such agreement. An intimation in the acceptance of such tender that a contract will be prepared, merely means that a formal instrument shall be drawn up containing the terms of the previous agreement.—Lewis *v.* Brass, 3 L. R., Q. B. D., 667 (1877).

[This case shows that persons who make tenders should be careful to do so with their eyes open, otherwise they may find that they are bound fast by the contract into which they have entered. If, however, it can be gathered from the tender and acceptance that the agreement is made *subject* to the preparation and approval of a formal contract, then there is no agreement independent of that stipulation, and the formal contract is that which binds the parties.—See Winn *v.* Bull, 7 L. R., Ch. D., 29 (1877).

A PERSON who invites, by writing or word of mouth, tenders for work or for the purchase of anything does not by so doing impliedly promise to accept the lowest or the highest offer, or to accept any one of such tenders. The notice to persons willing to tender

* See pp. 364, 423, 479, and 599, *ante*.

is a mere proclamation that he who issues the notice is willing to receive and to consider offers.—Spencer *v.* Harding, 5 L. R., C. P., 561; 39 L. J., C. P., 332 (1870).

[If anything, say in the notice for tenders for a building, could be construed as showing an undertaking to accept, say, the lowest offer, then there would be an exception to the above general rule.]

If in a tender, or in the acceptance of a tender, there is a term that the materials to be supplied or the work to be done shall be at the order of the person who asks for tenders, then as soon as such order is given the tenderer is bound to supply the goods, or perform the work specified in the tender.—Great Northern Railway Co. *v.* Witham, 9 L. R., C. P., 16 (1873).

[Thus, if in a tender for the supply of bricks the tenderer agrees to supply as many hundreds as the house-owner may order between certain dates, then, as soon as the order is given, the tenderer is bound to supply the bricks required. It is suggested in the judgment in this case that a tenderer before the order is given might, after notice to the person to be supplied, back out of the agreement. But it seems doubtful if this suggestion, upon consideration, would be held sound.]

CONFERENCE ON NATIONAL WATER SUPPLY, SEWAGE, AND HEALTH.

SOCIETY OF ARTS.

We this week conclude our notes of this Conference.*

Mr. Cutler, C.E., who described himself as proprietor and manager of some waterworks at Eton, established in 1696, but which he had entirely reconstructed, defended the water-companies against the charges of extortion preferred against them, saying that while it was made a subject of complaint that more money was now charged for a given quantity of water than used to be the case, it was entirely forgotten that there was now a greater demand for water, and it had, in consequence, gone up in value.

The Chairman (the Right Hon. James Stansfeld, M.P.) said he was quite prepared to admit that there was something in Mr. Cutler's argument, but not sufficient to justify the heavy charges of the London companies. With reference to the question of rating for certain sanitary purposes in rural districts, raised by Mr. Brown's paper, he thought Mr. Brown had very clearly shown that the absence of a sufficient amount of elasticity in our statues was a great check to sanitary progress.

Mr. Joseph Lucas, F.G.S., submitted a paper on "Water-shed Lines: subteranean Water Ridges." It was a paper full of interest, but one of which it would be impossible, in the space at our command, to give an intelligible abstract. Some remarks on the paper were made by Mr. Edwin Chadwick, C.B., and Mr. Shelford, C.E.

The Conference then proceeded to discuss the subject of river conservancy. In this connexion Mr. James Dillon, C.E., read a paper "On the Effects of Under and Arterial Drainage on River Floods." The paper embodied the results arrived at by the author in the case of the Upper Inney River works, in Ireland. These works extend over 82 miles of rivers and tributaries; the catchment basin or area of country discharging its waters into this system of rivers extends over 278 square miles, and its centre is situated about 53 miles to the west of Dublin, at a level of 211 feet above the sea, the rock formation being limestone.

The whole of the river works were designed so as to carry off about 4 ft. below the surface of land, the flood waters of which formerly saturated and covered with water 12,260 statute acres of land, equal to 7 per cent. of the catchment basin. During the progress of the works, it was necessary to carry out extensive rock, gravel, and other excavations, and to rebuild sixty bridges, the total cost of which will amount to about 60,000*l.*

The works under my charge were commenced near Lough Iron, at the point where the Lower Inney Works, carried out under the direction of the Drainage Commissioners of Ireland, were suspended on account of their excessive cost and want of funds to proceed further up country.

Previously to the commencement of the Upper Inney drainage works, the average summer discharge in the river from the upper district amounted to ·0689 cubic feet per acre per minute, and the average flood discharge to ·4896 cubic feet per acre per minute. After the execution of the works, the average summer discharge at the same place amounted to ·0827 cubic feet per acre per minute, the flood discharge to ·4827 cubic feet per acre per minute. Almost similar results have been obtained by me in other districts. . . . . I have reason to think that a new Act for the United Kingdom, drawn very nearly upon the same lines as the existing Acts for Ireland, omitting their defects, would confer a great benefit upon the people in the three countries.

Mr. Lloyd was of opinion that the under-draining of agricultural land materially increased the quantity of water passing off into the rivers; and he was also of opinion that the recommendation which had been made by the Select Committee of the House of Lords to make a call on the inhabitants of the upper part of a catchment basin for a small contribution towards the cost of river conservancy, was just and equitable.

Mr. Robert Rawlinson, C.B., said he had stated broadly, before that committee, and he reiterated it, that land-draining and agricultural improvements had little or nothing to do in causing the excessive floods that had occurred of late years. The conditions upon which floods depended were beyond human interference. He did not mean to say that land drainage did not bring storm water down to the rivers much more rapidly than it would pass off land which was undrained, but the surface water was not the cause of the floods,—before it could be so the subsoil must be water-logged.

Mr. Edwin Chadwick submitted a paper on "The Course of Inquiry as to Works of Sanitation, and as to their Expense and Results." The paper took the form of a joint report made to the King of the Belgians by Mr. Chadwick and a Belgian officer of health on the sewerage and other sanitary works at Bedford and Croydon, with a view to the adoption of desirable improvements in some of the Belgian cities.

Dr. John Brown, Medical Officer of Health to the Bacup Union Sanitary Authority, submitted a paper "On Some of the Diseases due to Sewer-Gas Poisoning."

Dr. Thorne Thorne, of the Medical Department of the Local Goverment Board, contributed an important paper on the recent outbreak of enteric fever at Caterham and Redhill. He said that,—

During the fortnight ending February 2nd last, enteric fever broke out at Caterham, Redhill, Earlswood, Bletchingley, and Nutfield, in the county of Surrey. The outbreak appeared almost simultaneously in Caterham and Redhill, the attacks commencing in one town only a few hours after they were heard of in the other, and within a few days cases also came under treatment in the other places named, the total number of attacks reaching 196 during the fortnight referred to. Here were a series of outbreaks almost simultaneous in their incidence upon a series of towns and villages which were situated at distances varying from about three to ten miles apart, and which were all ascertained to have been, for a long time, remarkably free from the disease by which they were now attacked. . . . .

There was one condition which the several towns and villages where the disease prevailed had in common; they all derived their water-supply from the same source, namely, from the works of the Caterham Waterworks Company. And not only so, but it was ascertained that among the occupants of over 1,400 houses, within the infected district, to which the Company's supply was not delivered, no persons who had not consumed this water were affected, and also that from amongst those who habitually used other supplies, the disease had specially attacked the few who had been recent and occasional partakers of that derived from the company's mains. The suspicion, however, which under these circumstances naturally attached to this water, received no support either from consideration of the source whence it was derived, namely, the chalk wells, more than 500 ft. deep, sunk at the southern extremity of the high-lying ground which bounds the Caterham Valley on the west, nor from the history which had attached to its previous use, and which, in point of wholesomeness, had won for it a deservedly high reputation. But the evidence which associated the spread of the epidemic with the consumption of this water gradually became overwhelming, and hence everything relating to its sources, storage, and distribution was, with the ready co-operation of the company's officers, carefully inquired into.

The possibility of soakage of filth into either of the wells from cesspools had, even prior to the occurrence of the epidemic, attracted some attention. But, although the steadily-increasing practice of fouling the chalk, in various parts of the Caterham Valley, by means of cesspool soakage, is one which can hardly fail, before long, to constitute a source of danger to the water services deriving their supply in this locality from the stratum, if indeed it does not do so already, yet it appeared obvious that the epidemic in question had not been brought about in this manner. . . . .

During the latter part of 1878, and the beginning of the present year, the Caterham Waterworks Company constructed an adit from one of their old wells up to a new bore, which had been made for them by the Diamond Rock Boring Company, and which was at the time approaching completion. This adit is situated in the chalk at a depth of 455 ft. It measures 6 ft. by 4 ft., and is 90 ft. in length. A number of men were employed in this work, some of them being in the well below, others on the surface. Inquiry was made as to whether any of the men had ailed whilst at work, and it was ascertained that one of them, who left work some time in January, was believed to have been ill, although no inquiries had been made concerning him since he quitted the works. This man was found out, and the history obtained, both from him and from his wife, can leave no doubt that he had recently suffered from enteric fever. Indeed, it was ascertained that, though continuing at his work in the adit below, he was, from about January 5th until January 20th, when the severity of his symptoms confined him to his bed, the subject of a mild though marked attack of enteric fever, which was accompanied with such profuse diarrhœa that, notwithstanding certain regulations to the contrary, he was compelled to evacuate in the adit "at least two or three times" during each shift. The exact method by which his poisonous evacuations found their way into the water is a little uncertain, but even assuming the absolute truthfulness of his statement to the effect that a pail which was constantly being drawn to the surface was invariably resorted to as a closet, there were ample means, on his own showing, by which the well-water could have been contaminated by them. Within fourteen days of the commencement of his purging, the disease broke out in an epidemic form amongst the consumers of the company's water.

Confirmatory evidence as to the nature of the man's illness was obtained when it was ascertained that on the previous December 25th and 26th,—the exact date when his disease, if enteric fever, must have been contracted,—he had been away from Caterham, and had stayed in a town where that disease had been somewhat prevalent.

In short, there can be no doubt that the pollution of this water, as the result of the man's disease and the epidemic in question, were related to each other as cause and effect; indeed, the several essential incidents recorded are linked together in point of date, with a precision characteristic of the results which might have been expected to have followed a scientific inoculation. . . . .

Amongst the points deserving special notice in connexion with the circumstances of this epidemic, I would suggest the following:—

1. That the view, to the effect that even a comparatively minute quantity of the poison contained in the evacuations of enteric fever patients may, when subjected to conditions favourable to the development of that poison, lead to the specific infection of very large volumes of water to which it has gained access, is fully borne out.

2. That a special danger attaches to the prevalence of the mild—or, as they have been termed, "perambulatory"—cases of enteric fever, by reason of the intensely poisonous nature of the diarrhœa which characterises that disease.

And, having regard to these facts,—

3. That all possible sources of excremental contamination in the vicinity of water-courses should be rigidly dealt with.

4. That care should be taken, in connexion with works for the construction or storage of water, to exclude from employment all persons suffering from any diarrhœal affection.

Mr. Ernest Hart gave a *resumé* of a paper submitted by him on "Epidemics caused by Polluted Water Supply." It contained a table giving, according to the author, the facts as to the causation, progress, and fatality of epidemics of a certain class of zymotic disease in England, which have been proved to have been due to polluted water since the passing of the Sanitary Act, 1866. In conclusion, he said:—

It is impossible to make any sort of estimate of the number of lives annually sacrificed in this country at the shrine of polluted water. But the deaths must represent a very considerable proportion of the fatality from enteric fever, to say nothing of other diseases. When it is remembered that, in 1877, no less than 6,879 entirely preventible deaths occurred in England and Wales from this one disease alone, and that thus, in one year, some seventy thousand people were caused needless suffering and anguish, through the ravages of a disease intimately connected with filth, it will be seen how great a stake England has in the maintenance of the purity of its water.

Mr. C. N. Cresswell contributed a paper on "The Thames and its Tributaries." He observed that,—

At the commencement of the present century, the Thames was a pure and wholesome river; now, throughout a great part of its course, it is the common sewer of Middlesex and Surrey. The Thames has many tributaries; either natural streams, as the Mole, the Crane, and the Brent, converted into open sewers by a process of gradual contamination, or artificial feeders directly conveying the sewage of populous towns into the river bed. This is the practical outcome of sanitary efforts in the Thames Valley during the past thirty years, the history of which period is a tale of doing and undoing, of official meddling and local muddling; of misdirected zeal on the one hand, inert bewilderment on the other. Heretofore the public health had been no concern of Government, but the ravages of cholera in 1847, and the abnormal increase of disease in the centres of population, arrested the attention of the Legislature. In 1848 the era of tentative legislation began, and the Act was passed "for improving the sanitary condition of towns." The metropolis and its suburbs were excluded from this Act, for divers occult reasons not altogether intelligible to ordinary minds. The alleged ground was, that the sanitary condition of the metropolis had, for a period as far back as the reign of Henry VIII., been regulated by Commissioners of Sewers, the powers and jurisdiction of which were extended and consolidated by another Act in the same year.

Having given the history of the efforts of Richmond and the neighbouring towns to dispose of their sewage, Mr. Cresswell concluded by referring to the discharge of the sewage of London into the Thames. On this head he observed:—

The condition of the river below Barking-creek in the heat of a summer's morning, at mid ebb, beggars all description. The mariner, fog-bound and becalmed, as each turn of the screw stirs up the film and the slime floating on the surface, can appreciate at his leisure the well-remembered words of the late Mr. Newton, chairman of the General Purposes Committee of the Metropolitan Board of Works,—"We have got rid of our sewage" (he is reported to have said in January, 1873), "and with the sanitary aspect we have nothing to do."

Nobody, in truth, appears to have anything to do with the sanitary aspect of metropolitan drainage. It is true there is the Rivers Pollution Prevention Act of 1876, but as in 1848, so now in 1876, the metropolis is above the law of the land.

There are Conservators of the River also, and their engineers and Captain Calver report ever and anon; yet the Conservators do absolutely nothing, paralysed, it may be, by the enormity of the transgression, or aghast at "that

* See pp. 552, 578, and 609, *ante*.

matchless intrepidity of face" with which the authorities in Spring-gardens avow the deed, and openly seek to justify it. It has been asserted that the Metropolitan Board have violated both the letter and the spirit of their own Acts, the avowed object of which was "the purification of the Thames." Certain is it that, whatever the technical construction of the statutes, the Legislature at that time contemplated, and the public expected, the utilisation, not the total waste, of the sewage of the metropolis.

Meanwhile, the mischief accumulates, and although the Corporation of London has made some sign, and the Secretary of State is invested with power under the Act, upon complaint made, to direct an inquiry, and take proceedings thereon, nothing has been heard of any application by the Conservancy for the intervention of Government. There have been more than enough of local inquiries and reports, which stave off the reality of relief, and 'lose the name of action.' . . . .

At this juncture, neither Parliament nor the public are in earnest, whilst the Circumlocution Office in Whitehall stands with folded arms, waiting, peradventure, for a more convenient season than the eve of a general election, or for a new revelation in the guise of another national pestilence."

Several other papers were submitted to the Conference, but not read. We have, in our previous notes of the proceedings, given the text of the resolutions agreed to.

THE TURNHAM-GREEN MILITIA BARRACKS.

THE militia barracks at Turnham-green were sold by auction recently at the Mart, Tokenhouse-yard, by order of the Middlesex county authorities. The property, with the parade-ground, covers an area of 1¼ acre in extent, and is situated on the south side of Turnham-green, close to the railway station, having a frontage to the main road nearly 200 ft. in length. The greater part of the buildings were described as of modern construction, and in an excellent state of preservation. The main block comprises the adjutant's residence, with two wings on either side for stores, armoury, orderly-room, pay-office, and guard-room, with the sergeant-major's quarters on the upper floor of one of the wings. Another block comprises the sergeants' quarters, two and three stories in height, and containing eighty-eight rooms, in suites of four and five rooms each. Mr. Fox, the auctioneer, in introducing the property, observed that the position and capacity of the estate admirably adapted it to building purposes, there being a great demand for houses in the neighbourhood of the site owing to its facilities of railway communication with all parts of the metropolis. He added that it was also particularly adapted for manufacturing purposes, the existing buildings being easily convertible. The Government, he said, had spent about 10,000*l.* on the land and buildings, but all that the county authorities now wanted for them was a fair market price. They were to be sold in consequence of the consolidation of the army arrangements in the county of Middlesex, and as the Government had now no further use for them they must be sold for what they would fetch. The first offer made was 2,000*l.*, quickly followed by one of 2,500*l.*, and the property was rapidly run up to 4,000*l.*, at which sum it was sold. It was stated in the room that the intention of the purchaser is to convert the buildings into a manufactory.

THE NEW PATENT OFFICE BUILDINGS, CHANCERY-LANE.

AMONGST the most recent buildings in the City is the new Patent Office at the corner of Chancery-lane and Southampton-buildings, which is now almost ready for occupation. The structure has bold elevations to the thoroughfares named, carried to a height of 66 ft. from the ground line, and mainly uniform in their architectural design and character. The Chancery-lane frontage, which is 44 ft. in length, contains three lofty stories, in addition to a deep and well-lighted basement and the ground floor. The elevation is carried up with projecting piers at each angle. All the windows to the several floors, including the basement (the ceiling of which is considerably above the street level), are two-light. On each side of the ground floor there are two mullioned windows of large size, together with a smaller double window in the centre. The first-floor windows are the most ornamental features in the structure. They are three in number, the central window projecting considerably beyond the general face of the elevation, and the base containing carved stone-work; whilst the two windows on either side have deeply recessed elliptical heads, under which are arches in stone, of about 18 in. in depth, and faced with fret-worked panels. The central window of the second story rests upon the bay window beneath it, projecting beyond the main face of the elevation in a similar manner, and is surmounted by a pediment. The third story contains a range of mullioned windows. The elevation is surmounted by a balustrade, with a lofty pediment in the centre, rising to a height of 70 ft. The general face of the elevation is in red brick, with Bath-stone dressings, and a free introduction of carving, a prominent feature of which consists of carved swags at the foot of the windows of each floor, festoons of fruit and flowers being also introduced in other parts of the elevation. An ornamental iron railing incloses an open area in the Chancery-lane frontage. The return frontage in Southampton-buildings is of similar length to that in Chancery-lane, the only difference in the architectural character of the two frontages being that the entrance to the building is in Southampton-buildings, by a lofty porch, surmounted by a pediment, which prevents an oriel window like that in Chancery-lane. The upper portions of all the windows are glazed with coloured and stained glass. The whole of the ground-floor of the building will be appropriated to patent office purposes, the upper stories being let as offices.

The architect is Mr. T. Searancke Archer, of Gresham-buildings, E.C.; and the builders are Messrs. Lloyd & Co., of Battersea.

SALE OF LEASEHOLD GROUND RENTS AT BRIXTON.

ON Thursday, the 29th of May, a large sale of leasehold ground-rents took place at the Auction Mart, Tokenhouse-yard, the sale being conducted by Messrs. Glasier & Sons, of Charing-cross. The property consisted of the ground-rents of the houses on the Milkwood Estate, at Brixton, situated near the Loughborough Junction and Herne-hill stations of the London, Chatham, and Dover Railway. It comprised the improved ground-rents secured upon 419 private houses, thirty-seven shops, and a large public-house on the estate, amounting in the whole to 1,528*l.* 12s. per annum, the estimated rack rental of the estate being set down at 15,000*l.* per annum. The estate was said to be held direct from the Ecclesiastical Commissioners, for an unexpired term of eighty-seven years. The property was divided into thirty-four lots, the lots ranging from 24*l.* to 107*l.* per annum, to suit the requirements of all classes of purchasers, and including the ground-rents of houses varying from about ten to 100 in number.

There was a very large attendance, and before commencing the sale the auctioneer announced that fourteen of the lots had already been sold by private contract, and he might add that he could easily have disposed of the whole of the lots in a similar manner, but, inasmuch as so much publicity had been given to the sale, he was anxious that those desirous of purchasing should not come to the sale to be disappointed, and it had, therefore, been determined to submit the lots now for sale to public competition. He then observed that the security which he had to offer to purchasers was of the very best kind, for there was no better security than ground-rents, and, in the present instance, there was this further advantage that nearly all the lots would be sold altogether free of the ground-rents payable to the Ecclesiastical Commissioners, from whom the estate was held. They would also perceive that the rack rents were many times the amount of the ground-rents which they secured.

The first lot consisted of a ground-rent of 78*l.* 10s., and was sold for 1,500*l.*; lot two, ground-rent, 70*l.* 10s., realised 1,400*l.*; lot three, ground-rent, 106*l.*, sold for 1,680*l.* This lot consisted of ground-rents of 104 houses on the estate, amounting to 470*l.* per annum, out of which 364*l.* per annum is payable to the Ecclesiastical Commissioners, leaving a net improved ground-rent of 106*l.* per annum. Lot four, ground-rent, 73*l.*, was sold for 1,465*l.*; lot five, ground-rent, 54*l.*, 1,075*l.*; lot six, ground-rent, 25*l.*, 475*l.*; lot seven, ground-rent, 45*l.*, 900*l.*; lot eight, ground-rent, 24*l.*, 470*l.*; lot nine, ground-rent, 25*l.* 15s., 480*l.*; lot ten, ground-rent, 31*l.* 5s., 620*l.*; lot eleven, ground-rent, 50*l.*, 1,010*l.*; lot twelve, ground-rent, 56*l.*, 1,100*l.*; lot thirteen, ground-rent, 36*l.*, 720*l.*; lot fourteen, ground-rent, 60*l.*, 1,200*l.*; lot fifteen, ground-rent, 30*l.*, 610*l.*; lot sixteen, ground-rent, 35*l.*, 700*l.* For lot seventeen, consisting of the ground-rents of 128 houses on the estate, amounting to 676*l.* 10s. per annum, out of which 605*l.* 10s. per annum is payable to the Ecclesiastical Commissioners, there was no offer, and it was withdrawn.

As regards this lot, the auctioneer observed that they must not suppose because he withdrew the lot that they could buy it on the following day. He assured them that he had a private offer for it at about nineteen or twenty years' purchase, and he could sell it at once on returning to his office.

Lot twenty consisted of four plots of building land, of the estimated annual value of 40*l.* It was sold for 590*l.* Lot twenty-eight, ground-rent, 28*l.*, sold for 560*l.*; and for the last lot, which consisted of a triangular plot of ground, stated to be suitable for a church or public building, there was no offer, and it was withdrawn.

The total proceeds of the day's sale amounted to 16,545*l.*, and the aggregate sum realised for the property, including the lots sold by private contract, was 28,000*l.* It will be seen that the lots, as a rule, realised twenty years' purchase. In other words, for the benefit of the non-professional reader, persons so buying gave up their money on condition of receiving 5 per cent. on it per annum for eighty-seven years.

THE NEW NATURAL HISTORY MUSEUM, SOUTH KENSINGTON.

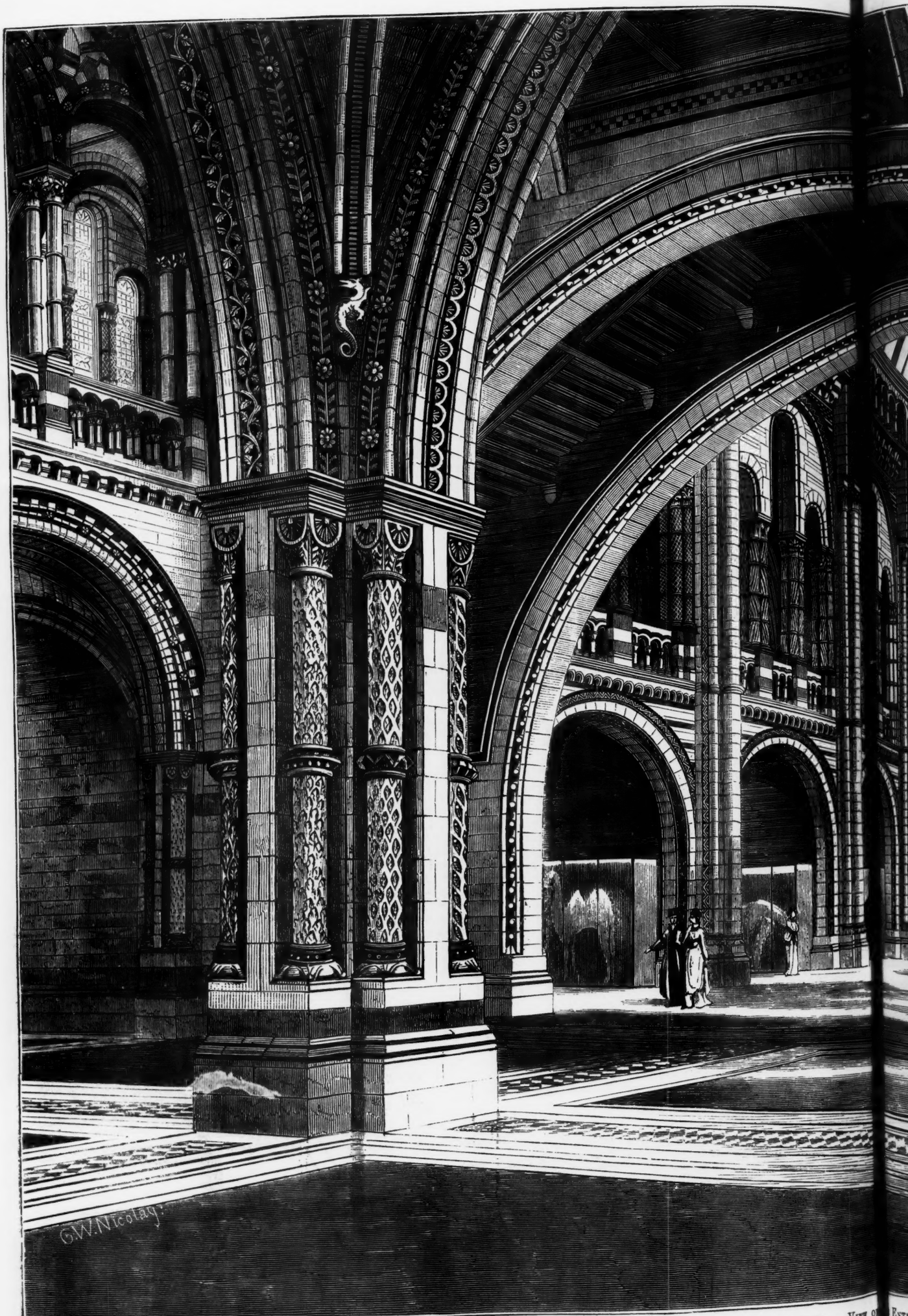
THE Index or Typical Museum, of which we illustrate the interior, is the great entrance-hall of the new Natural History Museum in Cromwell-road, South Kensington. It occupies the centre of the building, and runs north and south.

At the south end is the principal entrance, and at the north end the grand stair up to the first floor. Along the sides are deep bays, to be used as exhibition spaces, and above these are galleries which lead from the staircase at the north end to the foot of what is practically its continuation at the south end. Here the hall is spanned by a gigantic elliptical arch, carrying the staircase, which rises right and left until it reaches the summit of the arch, whence a single flight leads to the second-floor level. At each break of the balustrade, both here and at the north end of the hall, is a pedestal to carry a statue. The hall is entirely faced with buff terra-cotta, relieved by bands of grey. The mouldings of the arches, string-courses, &c., are enriched with a profusion of foliage, and much interest is awakened by the introduction of flowers, birds, and monkeys, which can be seen in the view we present to our readers. The floor is of marble mosaic. The roof is carried by wrought-iron semicircular lattice girders, with conventional foliage inserted into the triangular spaces between the struts. A range of roof-lights runs on either side from end to end of the hall, while the flat centre of the ceiling has been decorated with a series of illustrations of plant life on a blue ground.

A general view of the new Natural History Museum was given in the *Builder* for the 4th of January, 1873, and a plan in the number for the 11th of January of the same year, together with a descriptive account. Additional particulars were given in our volumes for 1876 (p. 120) and 1878 (pp. 83 and 635).

The building has been erected from the designs and under the superintendence of Mr. Waterhouse, A.R.A. Messrs. G. Baker & Sons are the general contractors. The terra-cotta has been supplied by Messrs. Gibbs & Canning of Tamworth.

Patent Museum.—An interesting old engine, Heslop's winding and pumping engine, patented A.D. 1790, is to be seen at South Kensington. This engine was erected at Kell's Pit for raising coals, about the year 1795, afterwards removed to Castlerigg Pit, and, in 1837, to Wreah Pit, all near Whitehaven. At the latter place it continued to raise coals, also work a pump, by means of a cast-iron beam placed above the main beam, until the summer of 1878, when it was removed here. By this arrangement of two cylinders Heslop obtained advantages closely approaching those of the separate condenser, and effected a signal superiority over the atmospheric engine of Newcomen, even as it then existed, with all the structural improvements introduced by Smeaton. No other engine of this type now remains in existence, and it is therefore appropriate that this one, the last that worked, should be preserved. The Patent Museum is scarcely so much visited as it might usefully be.



THE NEW NATURAL HISTORY MUSEUM SOUTH KENSINGTON.—View o… …Ent…

…ENTRANCE HALL, OR TYPICAL MUSEUM.——MR. WATERHOUSE, A.R.A., ARCHITECT.

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WAS SHAKSPEARE A BUILDER?

At a recent meeting of the Birmingham Shakspeare Reading Club, Mr. W. T. Bennett read the following able and remarkable paper on Shakspeare from a Builder's point of view:—

Of William Shakspeare we know very little, and I will simply say that he was born at Stratford-on-Avon, attended school there, went to London, turned actor, wrote plays and poems, returned to Stratford, died, and was buried. So comprehensive are his writings, so apt his sayings, that he has been claimed as a lawyer, a woolstapler, a butcher, a doctor, &c. But I have never heard of Shakspeare having been claimed as a builder, and it is because I happen to be a member of that trade, and, consequently, more likely to know more of its technicalities than I otherwise should do, that I have ventured to look over his works, and see if any of his remarks prove to us that his great knowledge, which grappled with almost all subjects, extended into the mysteries of the building trade. In the first place, then, I find that in his play of "King Henry IV.," part 2, he has laid down the most important advice to a builder, or to one about to build, and at the same time, though thoroughly practical, in the most beautiful and fitting language. It occurs in the third scene of the first act, where the *Archbishop of York*, and the *Lords Hastings*, *Mowbray*, and *Bardolph* are discussing whether they are "a body strong enough to equal with the king," when *Lord Bardolph* is made to say,—

> "When we mean to build,
> We first survey the plot, then draw the model,
> And when we see the figure of the house,
> Then must we rate the cost of the erection:
> Which, if we find outweighs ability,
> What do we then, but draw anew the model
> In fewer offices; or, at least, desist
> To build at all? Much more, in this great work
> (Which is, almost, to pluck a kingdom down,
> And set another up), should we survey
> The plot of situation, and the model;
> Consent upon a sure foundation;
> Question surveyors; know our own estate,
> How able such a work to undergo,
> To weigh against his opposite; or else
> We fortify in paper, and in figures,
> Using the names of men instead of men:
> Like one that draws the model of a house
> Beyond his power to build it; who, half through,
> Gives o'er, and leaves his part-created cost
> A naked subject to the weeping clouds,
> And waste for churlish winter's tyranny."

Nothing can, in my opinion, be more beautiful than this; nor shall I be able to find another passage in all Shakspeare more thoroughly practical. Indeed, no better advice could be given by any one, however intimately he might be connected with the trade. Many of you have seen, as I have seen, a half-erected building falling day by day into decay, through want of judgment in the first instance, which, if Shakspeare's advice had been taken, could never have happened, and through which important omission has become "a naked subject to the weeping clouds, and waste for churlish winter's tyranny." Shakspeare seems well to have known the damaging influence of wind and weather upon an unprotected building, and often in his writings compares love forgotten to a building thus deserted, as, for instance, in the "Comedy of Errors," *Luciana* upbraids *Antipholus* of Syracuse (under the belief that she is addressing *Antipholus* of Ephesus) with neglecting her sister, and asks him if "Love in the building can become so ruinous?" not doubting that in time love might decay, but in the building of the love it is not expected; and again in the Sonnets he declares that "ruined love, when it is built anew, grows fairer than at first, more strong and far greater." Again, in the "Two Gentlemen of Verona," when *Valentine* soliloquises on his separation from *Silvia*, he gives us a fine example in the following beautiful passage, where, comparing himself without *Silvia's* love to a ruined mansion, he exclaims,—

> "Leave not the mansion so long tenantless;
> Lest, growing ruinous, the building fall,
> And leave no memory of what it was!
> Repair me with thy presence, Silvia."

There is an old saying that an empty house is better than a *bad* tenant, and I have no doubt it is correct, *i.e.*, if the tenant is very bad, but with a moderately *good* tenant, the presence and occupation will keep the house in better repair than when it was empty. And, again, in the 13th Sonnet, he says it is wrong

> "To let so fair a house fall to decay
> Which husbandry in honour might uphold
> Against the strong gust of the winter's day."

And in Sonnet X.,—

> "Seeking that beauteous roof to ruinate,
> Which to repair should be thy chief desire:"

which shows Shaksperian knowledge of the fact that the roof is the most important part of a structure to be kept in repair in order to ensure the welfare of the rest of the building. And the same thought is evidently at work when, in "Timon of Athens," he causes *Flavius*, on seeing poor, generous, and good-natured *Timon*, to exclaim,—

> "Is yon despised and ruinous man, my lord?
> Full of decay and failing? Oh! monument
> And wonder of good deeds evilly bestowed."

A knowledge of the painting branch is displayed by the same speaker of the same person, when he says,—

> "To have his pomp, and all that state compounds,
> But only painted, like his varnish'd friends."

And again, in "Pericles, Prince of Tyre," we have a very good illustration of this, where the second lord, speaking to *Lord Helicanus* of the loss of the prince, compares the kingdom, without its head (*i.e.*, the *Prince*), to

> "Goodly buildings left without a roof
> Will soon to ruin fall,"

in order to persuade *Lord Helicanus* to rule in the absence of the *Prince*. Again, in "Cymbeline": *Lucius*, on discovering the dead body of *Cloten* without its head, he having been beheaded by *Gulderius* and *Arvirargus*, the sons of *Cymbeline*, exclaims,—

> "What trunk is here
> Without its top? The ruin speaks that some time
> It was a worthy building."

You will perceive that Shakspeare might have got comparisons from a thousand subjects, but has chosen similes in direct communication with the building trade. The words "build" and "built" seem to have been with Shakspeare a very favourite expression, and it is simply marvellous how often he uses them, and I will, just for a few moments, draw your attention to instances, where you will perceive that many other words in the English language would have answered his purpose; *e.g.*, for instance, such words as placed, made, formed, &c., would do as well. In "Macbeth," *King Duncan*, speaking of *Cawdor* after his fall, says,—

> "He was a gentleman on whom I built
> An absolute trust."

In this case the word "placed" would have answered the poet's purpose just as well, and would not have increased or decreased the number of feet in the line. In the 10th sonnet,—

> "A love that was builded far from accident."

In the "Winter's Tale," *Hermione*, in her appeal to *Leontes*, says,—

> "Gentle, my lord,
> You scarce can right me thoroughly than to say
> You did mistake."

Leontes answers,—

> "No, no; if I mistake
> In those foundations which I build upon
> The centre is not big enough to bear
> A school-boy's top."

Here the word "suspicions" might have been used instead of "foundations," and "rely" in place of "build." In "Othello," *Iago*, after setting *Othello* on the rack, then says,—

> "You'll take no notice, nor *build* yourself
> A trouble out of his scattering and unsure observance."

The word "make" here would do as well as "build." And in "All's Well That Ends Well," when *Bertram* despises the hand of *Helena*, the *King* says—,

> "'Tis only title thou disdain'st in her,
> The which I can *build* up."

In this case the word "supply" would do just as well. In "Timon of Athens," *Timon* says to the old Athenian,—

> "This gentleman of mine hath served me long,
> To build his fortune I will strain a little,
> For 'tis a bond in men."

In "Troilus and Cressida," when the question is asked who *Troilus* is,—

> "They call him Troilus, and on him *erect*
> A second hope, as fairly *built* as Hector."

These are true building phrases, used in a literal sense to show the hope and trust that was placed upon *Troilus*, and that their confidence would not be misplaced. In the "Twelfth Night, or What You Will," *Sir Toby Belch* says, in the exact language of a builder,—

> "*Build* me my fortunes upon the *basis* of valour."

In "Othello," *Iago* says to *Roderigo*, when he has called him to account,—

> "Why, now I see there's metal in thee; and even, from this instant, do *build* on thee a better opinion than ever before,"—

where the phrase "form of" would have had precisely the same meaning. In "King Henry VI.," Part 3, *Prince Edward* says to *Warwick*—

> "For on thy shoulder do I *build* my seat."

In the "Merry Wives of Windsor" *Falstaff* regrets

> "having *built* upon a foolish woman's promise."

The word "relied" here would have conveyed *Falstaff's* meaning. In "King Henry IV.," part 2, *Shallow* says to *Falstaff*,—

> "Shall I prick him, Sir John?"

Falstaff replies,—

> "It were superfluous; for his apparel is *built* upon his back, and the whole *frame* stands upon *pins*: prick him no more,"—

a speech abounding in true building terms. In "Pericles, Prince of Tyre," the *Second Gentleman* says of *Lord Cerimon*,—

> "Your purse, still open, hath *built* Lord Cerimon
> Such *strong* renown as time shall ne'er *decay*."

In "Much Ado about Nothing," *Don John* asks *Borachio* if what he says

> "Will serve for any *model* to build mischief on,"

which might have read, "for any *excuse* to make mischief of." In "King Henry IV.," part 2, the *Earl of Westmoreland* says to *Lord Mowbray*,—

> "You should not have an inch of any *ground* to *build* grief on."

As we cannot build without ground to build upon, how *apropos* is all this, and what knowledge is shown, when it might have read with the same effect if "ground" had been "cause" and "build" had been "create"; and again, in "Richard III.," *Buckingham* says to *Gloucester*, when persuading him to play the hypocrite,—

> "Stand between two Churchmen, good my lord,
> For on that *ground* I'll *build* an holy descant."

In "King Henry VIII.," *Buckingham*, in his famous speech before execution, says,—

> "Yet let them look they glory not in mischief,
> Nor *build* their evils on the graves of great men."

In "King Lear," the *Earl of Kent* says to the *Gentleman*, whom he asks to take a letter for him,—

> "If on my credit you dare *build* so far
> To make your speed to Dover——."

Here again it might have read, "If on my credit you'll rely so far." In "Macbeth," *Macduff*, upon the discovery of the murder of *Duncan*, says,—

> "Confusion now hath made his masterpiece;
> Most sacrilegious murder hath broke ope'
> The Lord's anointed *temple*, and stole thence
> The Life of the *building*."

In "Troilus and Cressida," *Cressida* speaks of

> "The *strong base* and *building* of her love,"

as the beginning and gradual continuance or formation of it, though Shakspeare's building terms here convey splendidly the meaning he intends. Of course, there are many more examples, but I think I have quoted sufficient to prove that Shakspeare's knowledge of the building trade, however attained, was as continually in his thoughts as any of the medical, legal, or other phrases that would justify the assertion that he belongs to any of the other trades or professions I have before mentioned, and that these building phrases and expressions would not have been used had it not been that Shakspeare possessed an intimate knowledge of the building trade, which caused him so continually to harp upon it, on the same principle that we invariably quote from the authors with which we are most conversant and familiar. In "Richard III." it is mentioned that Julius Cæsar commenced to build the Tower of London. In "Pericles, Prince of Tyre," we are told that "Tyre was built by Antioch the Great, for his chiefest seat." This shows his interest in building and building matters, and it is a fact that even to the present day, when we gaze upon any building of splendour or importance, the natural question is, who built it? and much more, especially between members of the trade, who are always anxious to know the name of the builder who has produced an effective or important work. *Cement* is a most important article in the building trade, and, as you are aware, is used principally to join two kinds of materials together, which when together form a whole; and when, in "Antony and Cleopatra," we find that the wife of *Cæsar* was the sister of *Antony*, it is really a very *apropos* expression, and in strict accordance with the object of this paper,

when we find the following remarks put into the mouth of *Cæsar* :—

"Most noble Antony,
Let not the piece of virtue which is set
Betwixt us, as the *cement* of our love,
To keep it *builded*, be the *ram* to *batter*
The *fortress* of it."

And in "Coriolanus," IV., vi., 85, *Cominius*, upbraiding *Menenius* for his conduct, says,—

"You have help'd to melt the city leads. Upon your pates,
Your *temples* burn'd in their *cement*, and
Your franchises, whereon you stood, confined
Into an augre's bore."

This is a smart reproach, and abounds with building phrases, showing Shakspeare's knowledge that the temples were constructed of cement, which would be a fact, and that the flats or roofs were covered with lead, which would necessarily melt in case of fire, and that an auger's bore was so small that their franchises could not be much less. Shakspeare also conveys the same meaning as to the smallness of the auger-hole, in his "Macbeth," when *Donalbain* says to *Malcolm*,—

"What should be spoken here,
Where our fate hid within an augre hole,
May rush and seize us?"

And, once more, in "Anthony and Cleopatra," II., i., 48, *Pompey*, speaking to *Menas* of the army of Cæsar that is coming amongst them, says,—

"But how the fear of us
May *cement* their divisions . . . . we yet not know."

Here we have an undoubted building phrase, when the simple word "unite," or others, would have answered the author's purpose. It is always a consideration with architects and builders to choose a site in such a position as to elevation or prospect that renders the building when completed both healthy and enjoyable, and Shakspeare seems to have known this, when he says,—

"Build there, carpenter, the air is sweet."

And again,—

"A pretty plot, well chosen to build upon."

And a really lovely passage occurs in "Measure for Measure." When *Angelo* is contemplating the seduction of the beautiful and chaste *Isabella*, he endeavours to banish her thoughts by the expression,—

"Having waste ground enough,
Shall we desire to raze the sanctuary
And pitch our evils there?"

This is magnificent language, and condemns a proceeding that no good builder would ever attempt. And in "Richard II.," II., i., 43, when *John of Gaunt* is on his death-bed, Shakspeare shows how well he understood the importance of the site England holds upon the map:—

"This royal throne of kings, this sceptred isle,
This earth of majesty, this seat of Mars,
This other Eden, demi-paradise,
This fortress *built* by Nature for herself,
Against infection, and the hand of war.
This happy breed of man. This little world,
This precious stone set in the silver sea,
Which serves it in the office of a wall,
Or as a moat defensive to a house,
Against the envy of less happier lands."

In "Julius Cæsar," *Flavius* asks one of the crowd,—"What trade art thou?" "Why, sir, a carpenter," *Marcellus* answers. "Where is thy leather apron and thy rule?" A carpenter always, or should always, carry a rule, and, though linen aprons are worn now, it was the custom for carpenters in Shakspeare's time to wear leather aprons, and, moreover, the question might have been answered by any other tradesman; but Shakspeare has chosen a carpenter, as he generally does whenever an opportunity presents itself, which I think shows an intimacy or connexion in some way with the trade he is so fond of quoting from. In the celebrated conundrum spoken by the *Gravedigger* in "Hamlet," Shakspeare honours the building trade by the mention of two of its branches:—

"Who builds stronger than the mason, the shipbuilder, and the carpenter?"

To which the *Second Gravedigger* makes reply:

"The gallows-maker; for that frame outlives a thousand tenants."

Shakspeare is here evidently punning, for the description of tenants intended to be conveyed are the unfortunate victims who come under the beam; but, at the same time, the tenons which compose a piece of frame-work are the pieces of projecting wood that are made to fit into the mortises, and it is a fact that the frame invariably wears out the tenons. This, to my mind, shows a very great knowledge, and may bear the construction of a double meaning. This answer, however, not being satisfactory to the *First Gravedigger*, he gives the answer himself, as follows:—

"The grave-maker; for the houses he builds lasts till Domesday."

Here is a difference of opinion; some editions have "houses he makes," and others "houses he builds"; both would be correct, as in the case of an earth grave it would be "makes," and in the case of a brick one it would be "builds," but I am inclined to the word "makes" as being the one adopted by the 1623 edition, which I invariably find to be in accordance with my own idea. As I have mentioned Shakspeare's punning in the building trade, I will just give another example from "Love's Labour's Lost." The *Princess of France* is in a park, when the King says:—

"*Fair* Princess, welcome to the Court of Navarre."

To which the Princess answers:—

"*Fair* I give you back again; and welcome I have not yet; the *roof* of this court is too high to be yours; and welcome to the wild fields too *base* to be mine."

In the "Merry Wives of Windsor" occurs a passage which Lord Campbell has made much of in showing up "Shakspeare's legal acquirements," which is as follows:—

"*Falstaff*. Of what quality was your love, then?
Ford. Like a fair house built upon another man's ground; so that I have lost my edifice by mistaking the place where I erected it."

I think I have as much right to it as Lord Campbell, inasmuch as the simile used by Ford shows a familiarity with my subject, and that such a mistake does happen I may tell you that one of the Birmingham Board schools has suffered from a builder making a similar error. That Shakspeare must have been aware of the habits of men employed in the building trade I think there is no doubt, after the speech he puts into the mouth of *Canterbury* in "Henry V.," I., ii., 98, where he compares the bees to "singing masons building roofs of gold," as it is a custom, and especially with masons, to sing when at work, especially the stone-carvers, being work of skill and little laborious labour. Shakspeare, in his beautiful play of "Coriolanus," makes a very graphic description of the populace coming out to gaze upon the victor in the following words:—

"Clambering the walls to eye him. *Stalls, bulks, windows*
Are smother'd up, *leads* fill'd, and *ridges horsed*
With variable complexions; all agreeing
In earnestness to see him."

The expression used here of "ridges horsed" is very significant indeed, and refers to the apex of the roof, which is called the ridge, and safety would be best secured upon them by striding them, or horsing them, as Shakspeare puts it; in fact, his is the best expression, especially when I tell you that such shaped ridges are called *saddle-backs* even to the present day. In the sixth scene of the first act of "Macbeth" occurs a remarkable dialogue between *King Duncan* and *Banquo* upon their arriving at the castle of *Macbeth*, which is so brimful of building allusions that one would almost imagine two builders were speaking, instead of the king and his general:—

"*Duncan*. This castle hath a pleasant seat; the air
Nimbly and sweetly recommends itself
Unto our gentle senses.
Banquo. This guest of summer,
The temple haunting martlet, does approve,
By his loved mansionry, that the heaven's breath
Smells wooingly here; no *jutty, frieze, buttress*,
Nor *coign* of vantage, but this bird hath made
His pendent bed and procreant cradle. Where they
Most breed and haunt I have observed the air is delicate."

You will observe here that jutty is a projection in a building, such as a window that projects from the line of building was called a jut window. "Frieze" is that part of the entablature of a column which is between the architrave and cornice, or a flat face that used to be enriched with figures, &c., upon which a bird could easily build its nest. "Buttress,"—a prop, to support another wall. "Coign of vantage" means convenient corner. So that we see that Shakspeare, per *Banquo*, in expressing the belief that where the marten most builds its nest the air is soft and delicate, attempts to prove the assertion by drawing the king's attention to the fact that every jutty, frieze, buttress, and convenient corner is occupied by a nest. This not only proves what he has said to be a fact, but it also proves Shakspeare's knowledge of the building trade in putting into the mouth of *Banquo* such technical terms as "jutty," "frieze," "buttress," and "quoin." You will remember that *Coriolanus* has left the Roman camp and gone over to the side of the Volscians, and that his mother, his wife, and friend *Valeria* are sent to persuade him to return. *Menenius Agrippa* does not believe their solicitation will be of any avail, and thus expresses himself to *Sicinius*:—

"*Men*. See you yond' coign o' the Capitol,—yond' corner stone?
Sic. Why, what of that?
Men. If it be possible for you to displace it with your little finger there is some hope the ladies of Rome, especially his mother, may prevail with him."

Shakspeare, to illustrate what he considered an impossibility, might have chosen from a thousand subjects that his fertile brain could have conjured up, but the one he has chosen shows an intimate knowledge of the building trade, and I do not think one man in a hundred would make use of the word "coign" (which, I may tell you, is a technical term for an angle or corner of a building) unless he had had some experience or association of some kind more than ordinary. And again, in "Troilus and Cressida," *Nestor*, in a conversation with *Ulysses*, when endeavouring to persuade him to let *Ajax* fight the combat with *Hector* instead of *Achilles*, to enforce his argument makes use of the following significant expression:—

"His success shall give a *scantling* of good or bad unto the general body of the soldiers."

Now, "scantling" is a word very seldom used in a literal sense, and in this instance means size or measure; but in carpentry it is one of its commonest and most-used terms, and means the dimensions of a piece of timber in breadth and thickness. I cannot but think that Shakspeare must have had a knowledge of the trade, or he would not have used a word so seldom used in literature, and so commonly used in the building trade, when there were hundreds of applicable words from which he might have chosen. Beautiful is also the expression in the "Winter's Tale," where *Camillo*, speaking of *Leontes's* jealousy, says to *Polixenes*,—

"You cannot 'shake
The fabric of his folly: whose *foundation*
Is *piled* upon his faith.'"

In "Hamlet,"—

"The goodly frame, the earth:
This majestical roof freck'd with golden fire."

And also many familiar to the trade, as in "Cymbeline,"—

"The gates of monarchs are arch'd so high."

In "Merry Wives of Windsor,"—

"The right arch'd beauty of his brow."

In the "Merchant of Venice" *Lorenzo* says to *Jessica*,—

"Sit, Jessica. Look how the floor of heaven
Is thick inlaid with *patines* of bright gold."

"Patines" is an old word for plates of anything laid on a floor. In "Richard II." (III., iii., 26) *Percy* says to *Bolingbroke*, speaking of Flint Castle,—

"King Richard lies
Within the limits of yon lime and stone."

In "King Henry VI." (part 3, V., i., 84) *Clarence* speaks of his father's house,—

"Who gave his blood to lime the stones together."

These remarks serve to show that Shakspeare well knew of what materials these building were constructed. In "King Lear" (II., ii., 71), the *Duke of Kent*, when annoyed at the *Steward*, who had insulted him, says,—

"I will tread this unbolted villain into *mortar*, and daub the *wall* of a jakes with him."

Mortar has to be well mixed, and treading would effectually do it. Much controversy has taken place as to what *Hamlet* intended when he says,—

"I know a hawk from a hand-saw,"

some of the texts giving,—

"I know a hawk from a heron-pshaw,"

and others,—

"I know a hawk from a heronshaw";

but I am inclined to believe in the expression,—

"I know a hawk from a hand-saw,"

as the correct one, because the difference between the two, *i.e.*, "a hawk" and "a handsaw" is so great, and shows more distinctly *Hamlet's* satire to his school-fellows, *Rosencrantz* and *Guildenstern*, and because I believe Shakspeare to have professed a more than ordinary knowledge of the building trade, and consequently of the tools used in it; and because *Falstaff*, in his description of the scene at Gad's Hill, says,—

"My buckler cut through and through; my
Sword hack'd like a *hand-saw*,"—

a passage over which no controversy has ever taken place, and for which no printer has ever been blamed. Persons outside the building trade might imagine that a hand-saw was any saw used by the hand; but such is not the case, as every saw has a distinct and separate name, such as a sash-saw, a dovetail-saw, a ripper, and the one most used of all is called the hand-saw, which fact helps to establish Shakspeare's knowledge of the trade. *Falstaff*, besides using the term "hand-saw," makes use of the word "lever" to *Prince Henr*, thus,—

"Have you any levers to lift me up, being down?"

And also of the now much-quoted passage,—

"As dead as nail in door"

(the authorship of which has been frequently credited to Dickens). I would just mention this expression is used twice in all Shakspeare's works, viz., by *Falstaff* and *Jack Cade*, and shows how true Shakspeare is to nature in placing the expressions into the mouths of two characters so consistent with each other. Shakspeare is also very eloquent when describing places, and I do not know a builder or architect that could give a finer description of a chamber than that given in "Cymbeline":—

"The chimney
Is south the chamber; and the chimney-piece,
Chaste Dian, bathing.
* * * * * *
The roof o' the chamber
With golden cherubims is fretted: Her andirons
(I had forgot them) were two winking Cupids
Of silver, each on one foot standing, nicely
Depending on their brands."

And in "Measure for Measure," *Isabella*, speaking of *Angelo*, says,—

"He hath a garden, circummured with brick,
Whose western side is with a vineyard back'd,
And to that vineyard is a *planched* gate."

"Planched" is an old building phrase for a gate that is not framed, but covered with planks or boards. When, in the play of "Othello," *Cassio* has lost his place and regard with *Othello*, *Iago* persuades *Cassio* to solicit *Desdemona* to plead in his behalf, and makes use of the following significant language:—

"This *broken joint* between you and her husband entreat her to *splinter*, and my fortunes against any lay worth naming, this crack of your love shall grow *stronger than it was before*."

This is all familiar to the carpenter's shop, and it is a fact that one piece of timber jointed to another is "stronger than it was before," and if it is broken again it will break anywhere except at the joint. *Hamlet* speaks of the time being "out of joint," and in "As You Like It," when *Sir Oliver Martext* is called upon by *Touchstone* to join him and *Audrey* in marriage, *Jacques* says,—

"This fellow will but join you together as they join *wainscoat*; then one of you will prove a *shrunk panel*, and, like *green timber*, warp, warp."

All is perfectly correct, and "green timber" is the expression used for new timber to the present day, and the fact of its warping after being used is an inevitable consequence. Shakspeare seems to have understood the nature and peculiarities of different kinds of timber, *e.g.*, in the "Winter's Tale," II., iii, 90, *Pauline*, speaking of *Leontes*, says:—

"The root of his opinion, which is rotten
As ever oak or stone was sound."

And in "Othello," *Montano*, speaking of the high wind, when *Othello* is expected to arrive, says,—

"A fuller blast ne'er shook our battlements;
What ribs of oak, when mountains melt on them,
Can hold the mortise?"

Again, in the same play,—

"To seal her father's eyes up close as oak."

Shakspeare also has a knowledge of the tools employed, *e.g.*, in "King Kenry IV.," part 2, I., i., 114, the Earl of Northumberland compares a wretch with "fever-weakened joints" to "strengthless hinges." In "Hamlet" and other plays he speaks of the "grinding of the axe." In "Lucrece," he speaks of the "locks and the wards giving way." In "As You Like It," *Rosalind* says,—

"That was laid in with a trowel."

Meaning roughly done; which is the case still, I am sorry to say, with many bricklayers, whose duty it is to use a trowel. In the "Merchant of Venice," *Antonio* says to *Bassanio*,—

"Be assured
My purse, my person, my extremest means
Lie all unlock'd to your occasions."

In "King Kenry IV.," 2nd part, II., iv., 263, *Doll Tear-sheet* says to *Falstaff*,—

"They say Poins has a good wit;"

to which *Falstaff* replies thus:—

"He a good wit? Hang him, baboon! His wit is as thick as Tewkesbury mustard; there is no more conceit in him than is in a *mallet*."

In "Troilus and Cressida," *Thersites*, speaking of *Cressida*, says,—

"Now she *sharpens*. Well said, *Whetstone*."

In "Hamlet," *Rosencrantz* says,—

"The cease of Majesty
Dies not alone; but, like a gulf, doth draw
What's near it with it; it is a mossy wheel
To whose huge spokes ten thousand lesser things
Are *mortised* and *adjoin'd*."

In "Troilus and Cressida," in the Prologue, where Shakspeare speaks of Priam's six-gated city, and, after describing the names of the gates, says that they have

"Massy staples,
And *corresponsive* and *fulfilling* bolts."

In "Othello,"—

"Make me not to see it,
That the probation bear no *hinge* or *loop*
To hang a doubt on."

And in the "Winter's Tale," *Pauline* compares the fancy of *Leontes* to a

"Weak-hinged fancy;"

i.e., not able to support anything. A feature of very great importance occurs in the play of "A Midsummer Night's Dream," where, in the caste of the amateur actors, out of the six tradesmen who are introduced are *Quince the Carpenter* and *Snug the Joiner*. Now, Shakspeare must have had some insight into this trade to have made the carpenter and the joiner distinct, for I believe that many are under the impression that a carpenter and a joiner are one; but Shakspeare is, like he always is, perfectly right, for a joiner is a man who works in a shop and a carpenter one who works upon the buildings out of doors. When rehearsing, and when performing their play, the following takes place: *Quince* says,—

"Then there is another thing: we must have a wall in the great chamber, for Pyramus and Thisby, says the story, did talk through the chinks of a wall."

I am afraid many walls are built, even in this enlightened age, by some builders where the same proceeding might be indulged in. *Snug the Joiner*, who seldom speaks at all, here speaks with his knowledge of the trade:—

"You can never bring in a wall. What say you, Bottom? *Bottom*. Some man or other must present wall; and let him have some *plaster*, or some *loame*, or some *rough cast* about him, to signify wall."

And when *Wall* is speaking, *Theseus* is made to say to *Demetrius*,—

"Would you desire *lime and hair* to speak better?"

thus showing additional knowledge, for hair and lime are used together, and rough cast is the proper term at the present time. There are many allusions in Shakspeare to the tempering of clay, and as clay has to be tempered before it can be made into bricks, or for puddling, or other purposes for which builders use it, I will just give one out of the many examples. In "Henry VI.," part 2, III., i., 311, *Cardinal Beaufort* says,—

"The uncivil kernes of Ireland are in arms,
And *temper clay with blood* of Englishmen."

I have drawn attention to the word "cement," and I find two or three very fine examples occur in reference to "glue," used so much by carpenters. In "King Henry VI.," part 3, II., vi., 5, *Clifford* says that his "love and fear glued many friends" to the king. Again, in the same play, V., ii., 38, *Warwick*, when dying, speaks of the "cold congealed blood that glues his lips and will not let him speak," *i.e.*, freely. Shakspeare has touched upon many topics connected with my subject that I have not mentioned, such as cellar, cellarage, casement, lattice, well, bar, base, basis, bob, beam, edifice; and it may be interesting to know that the number of allusions from his plays and poems are as follow:—"King Richard III.," 6; "Macbeth," 6; "Pericles, Prince of Tyre," 3; "Julius Cæsar," 1; the "Sonnets," 6; "Timon of Athens," 6; "Hamlet," 8; "Measure for Measure," 5; "Merchant of Venice," 7; "Comedy of Errors," 2; the "Winter's Tale," 6; "King Richard II.," 3; "Titus Andronicus," 3; "Two Gentlemen of Verona," 2; "King Lear," 3; "Merry Wives of Windsor," 6; "King Henry V.," 3; "Othello," 10; "All's Well that Ends Well," 4; "Troilus and Cressida," 6; "Twelfth Night, or What you Will," 1; "King Henry VI.," 10; "King Henry IV.," 7; "Much Ado About Nothing," 1; "King Henry VIII." 1; "A Midsummer Night's Dream," 5; "Cymbeline," 5; "Coriolanus," 7; "As You Like It," 4; "The Tempest," 1; the "Passionate Pilgrim," 1; "Anthony and Cleopatra," 1; "Romeo and Juliet," 2; "King John," 2; "Love's Labour's Lost," 2; "Venus and Adonis," 2; "Lucrece," 1. Thus far, then, I have endeavoured to illustrate Shakspeare from "a builder's point of view," and in so doing I have no wish to be hypercritical, and to say that Shakspeare *was* a *builder*, because I think, by the same rule, I could prove him to be a gardener, a baker, or a groom, and many others, and because I think to make him out as belonging to all these would be as absurd as it is impossible. But I do think it quite possible that, after leaving school, there occurred a time, consisting of a few years, when his father, John Shakspeare, was no doubt in pecuniary difficulties, and during which time it is impossible to say how the time of our poet was employed; and I do consider it not altogether improbable that he may have sold his labour for the benefit of his family, and even have been one of the operatives of a Stratford or a neighbouring builder. If he ever was, he certainly left it again, which Shakspeare, from what I know of him, and what I know of the vicissitudes of a builder's life, would very soon have done; but whether this was so or not I am not prepared to say, but would rather content myself by saying that I am inclined to think that Shakspeare certainly was most industrious, that nothing escaped his notice in his thirst for knowledge, and that anything once having been under his notice it was in his "memory locked," to be released whenever his wonderful imagination required it. But certain I am of one thing, that he has built an edifice so vast in proportion, and so lovely in detail, that the taunts and criticisms of 300 years have never been able to destroy. He has held the mirror so faithfully up to nature that we find in his marvellous works passions to love and admire, to detest and to hate, portrayed to us in a manner that has never emanated from the pen of any other author. He has shown the vanity of all worldly greatness, and how those who venture on a sea of glory are left at last to the mercy of a rude stream that must for ever hide them. He has shown us the madness of ambition and the just reward of all evil. He asserts the responsibility of man and the righteous government of God. He has done service to the State and to humanity at large by spreading throughout the world a nobleness of purpose, a love of truth, a height of thought, a depth of feeling to every one of his readers. He has done service in supplying, in the most beautiful and interesting language, a history of our own land, which would have been a blank to many, and certainly to the masses, were it not for his grand historical productions. He has portrayed men and women in all the good and evil qualities of the human heart, and in such a manner that they are sterling patterns, either to attain to or revolt from. He at all times gives to his thoughts not only the most fit, but, at the same time, the most beautiful and rarest sentiments. He has given the loftiest moral truths, the loftiest expressions. His phrases have become household words; when we want an expression out of the common way we can turn to his pages and find it, and I do believe that in his marvellous pages there are passages applicable to almost every requirement. In short, his unapproachable genius has enriched mankind for ever with vast stores of moral wisdom and emotional interest, and has proved him to be the greatest builder the world has ever seen, inasmuch as he has built the grandest temple of literature that has ever been erected by mortal man, having chosen such a site that it can be viewed, and viewed with admiration, from all corners of the civilised world, and constructed it of such material that time can never decay, thus making him the greatest of all builders. And why? Because he has worked faithfully, and without any deviation, to those plans and details which were supplied to him by the greatest of all architects, the architect of the universe, God Himself.

Artists' Benevolent Fund.—The Anniversary Festival of the Artists' Benevolent Fund will take place on Saturday next, the 14th of June, when Mr. George Augustus Sala will preside. We cordially recommend to our readers this Institution, which was established in 1810 for the relief of the widows and orphans of British artists who might be left in necessitous circumstances.

REMARKS ON THE WORK OF THE SMITH IN THE SIXTEENTH, SEVENTEENTH, AND EIGHTEENTH CENTURIES.*

I MUST now proceed to the home view of our subject. The metal-work of our Perpendicular period is of a very high class, though the forms are of marked architectural character. The enclosure to Henry VII.'s tomb at Westminster, in bronze or latten, is, perhaps, the finest example of such work to be found; and the railing to Edward IV.'s tomb at St. George's, Windsor, is a marvel of elaborate construction. Both of these are probably the work of foreigners, the latter being popularly ascribed to the hand of Quentin Matsys. I have not been able to discover any conspicuous examples of ironwork of the Elizabethan age, though much of the smaller work, in lock-plates, hinges, &c., remains. In Exeter Cathedral there is a doorplate in the form of a crown, of sixteenth-century date, and the city itself possesses an interesting relic, probably of early seventeenth century workmanship, in some mace-holders of cut and chiselled sheet iron, coloured red and green, and parcel gilt. The vestry door to St. Saviour's, Southwark, has a handle in the form of a ring, with lizards on it of the same date. At Hurst Church, in Berkshire, there is a curious wrought-iron bracket for hour-glass, date 1636, painted and gilt. In most of the old Elizabethan mansions much useful work in the form of door-furniture, though generally of a plain character, may be found. Eastbury House, near Barking, furnishes some good examples of these. The Ashmolean Museum, at Oxford, has a fine lock-plate of a more ornamental description. I exhibit some sketches of a work of the Jacobean age, which is a very good example of the powers of the English smith. It is a screen formerly separating the pew of the Leversedge family from the lady chapel in the church of St. John, Frome. I consider this specimen singularly happy in design and delicate in execution. The composition gives due importance to the central feature bearing the armorial shield, whilst the side panels are agreeably diversified. The general size of main bars is ½ in. by ½ in. by ⅜ in. The lines of hammered work are not obliterated by sheet work, although there is quite sufficient of this latter to give a richness the design. Altogether there is what may be called a restrained freedom about this piece of work which is very pleasing. It has recently been added to the valuable collection of ironwork at South Kensington. Later in the seventeenth century we come to a series of examples which are probably well known to all London students,—the screens from Hampton Court. They are twelve in number, and were formerly placed at intervals of 50 yards in the fence dividing the Palace home-park. They were, however, dropping into decay, and were removed from the gardens into the Palace to preserve them. Seven of them have been for some years placed on loan in the Kensington Museum, and some of these have recently been placed in the East London Museum at Bethnal-green. Huntington Shaw, blacksmith, of Nottingham, is recorded as the artificer who constructed them, about 1695. His monument may be seen in Hampton churchyard. They are of large dimensions, about 13 ft. in width by 11 ft. high, and altogether exhibit a surprising amount of labour and ingenuity. The general construction of the whole series is on one pattern, but four of them are of richer detail than the others. Panels 2 ft. 4 in. in width, formed of uprights 2-in. square, filled in with a pattern of 1-in. bars, and supported by stays, form the supporting standards on either side. Between these is a flowing composition of elliptic scrollwork, with bold *appliqué* foliage and flowers, surrounding a panel about 3 ft. square, which in the four principal screens enclose representations of the national emblems,—the rose, thistle, and harp, the remainder being filled in with a diaper pattern. Above this is a heavy swag or chain of flowers, pendent from the beaks of eagle-headed scroll terminations, and crowning the whole is a foliated mask, with a figured and tasselled apron. All the detail is most wonderfully wrought out, the small rosebuds and sprays being represented with great fidelity to nature, as if in emulation of the work of Grinling Gibbons in wood. A naturalistic treatment, however suitable for the material in which this latter artist chiefly worked, is not, I think, at all so for iron. The ornament is almost entirely of an *appliqué* character. The larger scroll-ends, a subject on which I shall say a few words presently, are even cased with sheet-work. It is very surprising that notwithstanding the care displayed in the formation of these details the whole is very badly put together, and it is no wonder that the influence of time and weather were speedily bringing these fine works of art to ruin. Very few of the scrolls or stems are welded at their junctions, but simply united by iron tongues and pins, the heavy strains on which have in some instances caused them to give way. The leafage also, which in the most ordinary gatework of this period was always welded to the stems from which they spring, are here merely rivetted or screwed,—the larger branches in several pieces. Notwithstanding such defects, however, these works must always be objects of admiration from the boldness and originality of their design and the evidence of patient skill in their production. There are other productions of the smith at Hampton Court Palace well worthy of attention, such as the balustrading of the Kings' and Queens' staircases,—the work of a Frenchman, though doubtless from designs by Wren.

Of great importance, and doubtless familiar to most of you, is the ironwork in St. Paul's Cathedral by the same artificer as the last mentioned,—one Tijou, a Protestant refugee. The hand of the master-designer is here very apparent, although probably very much more was left to the workman than would be the case under our present system. The gates to the choir are noble in design and proportion, and exhibit a refinement, compared to the Hampton screens, which may be partially due to the nationality of the producer. In those facing the nave, exception may be taken to the imitation of fluted pilasters in open work, and to the *flattened* flaming urns at the top. I do not think the urn-shaped standard terminations at all an inappropriate form, but I do consider them unpleasant if in the flat, especially if the smith attempts to put them in perspective, and more especially when he represents them as if seen from the clouds, as in the Leversedge screen. The side gates display neither of these defects, the panelling being filled with close scrollwork, and the corona containing sconces for large candles, twenty-three to each screen. Nevertheless, we lose the vertical treatment in the gates, which gives so much more value to the flowing work above in the others. The grilles at back of stalls, the balustrade to gallery round the dome, and the work to the geometrical staircase, are, especially the latter, worthy of study.*

Many of the entrances to parks, public buildings, and mansions of the reigns of Queen Anne and the early Georges display noticeable gate-work on a large scale. A list of these, if made, would be of some length, but useful to the student. Amongst the more remarkable we may mention the gates to the Clarendon Press at Oxford, 1712; those at Trinity and New Colleges, in the same city; the gates to Temple Gardens, 1730; and to Gray's-inn, 1723. In the older suburbs of London, and in many provincial towns, one's attention is often drawn to the home-like dwellings of the last century, with fore-courts enclosed by wrought-iron railings and gates. Chelsea, Hampstead, and Clapham contain many examples, and through the medium of the Association's "Sketch-book" I have been able to place many illustrations upon the walls. It is amongst this domestic work, rather than in the more ambitious efforts of the smith, that the student of design will find most valuable motives and ideas. There is always a sense of fitness for the purpose designed, and generally a temperate use of ornament other than constructional,—that is, the hammered bars and scrolls are not overlaid with sheet-work, but depend upon the variety of curve and pattern into which they are wrought for richness. The natural structural composition of an open enclosure,—that of upright bars,—is seldom lost sight of, the leading lines being vertical, and the scrollwork being kept in subsidiary panels, or confined to the heads and principal standards. The gates themselves are often quite plain, the ornament being confined to the frame surrounding them. The flowing work of beautiful design gains much in value by being thus temperately employed, and the whole composition embellishes the building of which it forms a feature without disturbing its repose. Often unpretending enough, such work impresses one as that of men who gave their hearts to it, though it was usually produced in humble smithies. The careful and often excellent work turned out from our modern art factories somehow seems to lack the power of interesting you in its producer as this old work does. Doubtless one reason is that it is too perfect: you never see a curve gone slightly wrong, and the leaves are cut too closely to pattern, and are too well balanced. You can picture the old smith pausing to consider which way the curve should now be turned, or what twist to give the spray of the leaf,—possibly arguing a point of broken flexure with the idling critic, or interrupting his work to shoe a passing traveller's horse, and hear all the latest news of Marlborough's wars the while. One's mind would scarcely dwell upon the art-metal workman of the present day tracing down on the sheet careful details of elaborate foliations.

Before the opening up of the Northern and Midland coalfields, smelting operations were carried on in such forest districts as still afforded abundance of timber. In the reign of Elizabeth it was foreseen that the great demand for fuel to feed the increasing number of furnaces would tend to the rapid exhaustion of growing wood. Various repressive statutes were enacted, prohibiting the establishment of works altogether in some districts, and limiting them in others. The Weald of Sussex and portions of the neighbouring counties were the nearest source of supply to the metropolis. The earliest specimens of castings came from this district, and the "Sussex iron," in the form of andirons or firedogs and firebacks, is well known to the collector and dealer in "antiques." The decorative work in the firebacks is especially noticeable in the seventeenth and eighteenth centuries, some very elaborate compositions being produced, but always marked by a suitable or plastic treatment. The fine railings around St. Paul's, now being refixed, were the produce of a foundry at Lamberhurst in Kent, and are good specimens of the right treatment of cast-iron railings. The Sussex furnaces were finally extinguished in the middle of last century. Their history is an interesting one, and may be found in the volumes of the "Sussex Archæological Journal."

I have not the space to go into the question of cast-work, to the abuse of which useful manufacture we owe the pretentious, vulgar, and uncomfortable accessories which have disfigured our architecture to so great an extent.

The subject of iron design in the present day has been taken up by abler hands than mine. I only feel it incumbent on me to urge the necessity of making one's-self thoroughly acquainted with the different phases it has gone through in the periods I have been dwelling upon. In the earlier German and the simpler forms of our own eighteenth-century work, we have models of a natural and therefore artistic treatment of material, which will repay close study, and I am sure each of these periods might be advantageously treated of in a more detailed and technical paper than I have been able to put before you. I have now only time to indicate one or two points wherein I think such work offers useful guidance to the designer.

The most natural way of employing iron in an independent manner is surely that of an arrangement of bars or lines connected together in a constructive manner to combine lightness and strength. These bars may be manipulated in various ways, of section round or square or moulded, and the combinations of curved and straight lines offer an endless variety of pattern. Decorative work of lighter form, in which the sheet-iron is brought into play, may be applied to a certain extent only without interfering with the sense of stability given by the preponderating forged work. And this is always the principle of the earlier smiths, though generally lost sight of in the more important works of the later centuries, when the forged work was often but a constructive frame concealed by the application of decorative forms. Large mouldings, imitative of those in stone and wood, were formed out of sheet-iron, enclosing the bars supporting the structure, whilst cut and beaten work, highly-wrought, and made-up imitations of natural foliage, human forms, draperies, and other objects, frequently attached by rivets only, crowded the whole composition. Now in German work the figures, which were often introduced, were usually continuations of the scroll-bar, out of which they were worked in

* By Mr. W. Penstone. See p. 593, *ante*.

* In some of the City churches yet remaining may be found interesting pieces of ironwork. The Church of St. Paul, Covent-garden, contains some good work of a subdued design, harmonising well with that remarkable structure.

the solid, forming part of the structural composition, though often with wings and foliations of sheet-work attached. The leafage grows naturally out of the main lines, to which it is kept in subordination. The terminations of the voluted scrolls are points of the design which fitly receive ornamentation, and this detail alone is deserving of attentive study. Although the use of *appliqué* sheet-work, in the form of flowers or geometrical rosettes, is here quite a legitimate form of enrichment, we find that very generally sufficient effect is produced by simple treatments of the hammered bar. A great variety of these may be evolved out of the two principles of spreading the end,—in one case in the direction of the depth of the bar, in the other in the direction of its width. These methods in their simplest form, which a parallel treatment and a variation of round and flat iron, are generally found used together in our English gatework, giving a diversity to otherwise similar forms. By welding an additional metal, and by a combination of the two principles, with alterations to the sectional form of bar, many other developments may be obtained, of which we have here one or two examples, chiefly German. Or the termination may be hammered and chiselled, or stamped (as usual in modern work) into clog-heads or geometrical patterns. In all cases where exposed to probable rough treatment these methods are preferable to the use of cut and beaten ornament. As an example of consideration of fitness for purpose I would point to a gate of German work now at South Kensington. It is of a close diaper pattern, a *fleur-de-lys* ornament being formed on the upright bar by stout hammered foliations welded on. The points, of which there are many, are all carefully turned well inwards, and protected by the inclosing bar-work. Rounded clips are used, and it is quite possible to lean or be pushed against the gate without risking tatters,—a *desideratum* which is too frequently lost sight of by the modern designer. As a general rule, I do not think ordinary protective enclosures require highly-ornamental display. The area-railings of the last century, which are familiar to us all, with their standard panels at intervals in the assemblage of square bars, are to my mind much more satisfactory in a long frontage than elaborate patterns. The bold forms of the spear-heads and occasional scroll-ramps, with the now obsolete lamp-brackets and torch-extinguishers, quite sufficiently relieve the designs from tameness,—a failing which this material suffers less than any other,—and which is often most conspicuous in the most ornate work. There is often more character in a simple forging than in many pretentious patterns drawn from the sand-mould,—as a comparison between the spear-heads I have mentioned and the usual run of cast railing will testify. And I would repeat again that the great lesson which all old work impresses upon one is that the refinements of the file, scissors, and pliers should not be allowed to emasculate the vigour produced by hammer, tongs, and chisel.

In what I feel to be rather too sketchy a paper my endeavour has been to interest the architectural student in a subject worthy of careful attention. The present phase of the somewhat erratic course by which modern art progresses has brought the periods I have been referring to to the front. Whether it is a mere passing "craze," as some would have, and we are to return to the earlier work, or whether, having run through the styles of all centuries, from the twelfth to the eighteenth, "to get our hands in," we shall now satisfactorily develop a nineteenth-century school of distinct character, is a question I should not care to discuss. But of this I am sure, that all earnest, laborious work, of whatever age or style, is worthy of study, and the lesson of thoroughness may well be learned in these productions of the forge.

"The smith also sitting by the anvil and considering the ironwork; the vapour of the fire wasteth his flesh, and he fighteth with the heat of the furnace. The noise of the hammer and the anvil is ever in his ears, and his eyes look still upon the pattern of the thing that he maketh. He setteth his mind to finish his work, and watcheth to complete it perfectly."

In the discussion which followed,

Mr. Gilbert R. Redgrave moved a vote of thanks to Mr. Penstone for his interesting paper. The architectural students of London had every facility for the study of old ironwork in the splendid collection now in the Bethnal-green Museum,—formerly at South Kensington. The Hampton Court gates by Huntington Shaw had been repaired with thin copper, coloured to represent iron. It seemed to him that the great failure of modern ironwork was over-elaborateness. Modern ironworkers attempted too much.

Mr. W. Hilton Nash, in seconding the motion, said he thought that the designer of ironwork should use that freedom and restraint combined which had been advocated by Mr. Penstone.

Mr. Aston Webb supported the motion, and observed that Mr. Penstone had not said much as to Italian ironwork, a great deal of which was extremely good. One very notable and particularly good example was the grill of the tomb of the Scaligers at Verona. He could hardly say he quite agreed with Mr. Penstone in his strictures on modern ironwork, for he thought that our ironwork was one of the few things to which we might look with some satisfaction. The iron screen at Holland Park, Kensington, a modern work, was, he thought, a most beautiful example of the art of the smith.

After a few remarks from Mr. Farrow,

The Chairman put the motion to the meeting, and it was carried unanimously.

Mr. Penstone, in replying, expressed his indebtedness to Messrs. Hart, Son, Peard, & Co., for lending him specimens of ancient and modern ornamental ironwork in illustration of his paper. He expressed concurrence in Mr. Aston Webb's opinion of the iron screen in front of Lord Holland's statue at Kensington, and said it was by Mr. Thomas Jekyll, by whose hands, he was sorry to say, no more work would be produced.

THE GUARDS' CHAPEL, WELLINGTON BARRACKS.

THE Venetian enamel mosaic work is an especial feature in the alterations which have been made here. This has all been carried out by the firm of Dr. Salviati, Burke, & Co., of Venice and London.

Dr. Salviati, whose name is well known as the reviver of this class of work, is now associated with Mr. W. H. Burke.

The present work consists of a picture of Majesty above the chancel arch, "Placed by Queen Victoria to the glory of God in memory of the Soldiers of the Foot Guards who have died for their Country." Our Lord is represented in glory; He is seated on a throne; His right hand is raised, in the act of blessing; His left is holding a globe surmounted by a cross, denoting His supreme power, and the universal influence of the Cross over the world. On each side there is a kneeling angel, the one bearing the cross, the other the pillar of the flagellation, with the words above them, "Be thou faithful unto death, and I will give thee a crown of life." All these are on a gold ground, and executed by instructions from Mr. Street in the Byzantine style. In the apse is a picture of the Crucifixion. The Saviour is shown nailed to the cross. The sun and the moon are obscured. On the right of the cross stands His mother, with the two women who accompanied her to Calvary; on the left, St. John, and also the Roman centurion, who made the memorable confession of faith, "Vere Filius Dei erat iste,"—"Truly this was the Son of God." This central mosaic is to be supplemented later on by the addition of one of similar size on either side, which will represent the bearing of the cross by our Lord, and the descent from the cross.

Later on, the semi-dome will have a mosaic containing a representation of the Resurrection of our Lord. All these mosaics are on gold grounds, and when all is complete, this assemblage of mosaics will be the largest in England as a mass.

The cartoons have been all made, as already mentioned, by Messrs. Clayton & Bell. Mr. Burke visited Ravenna, Florence, Rome, and other cities in Italy to study the peculiar treatment of Byzantine mosaic, and afterwards went to Venice to superintend the execution of the work. The inscriptions, "Placed by Queen Victoria" and "Be thou Faithful unto Death," are on Jura marble supplied by Burke & Co.

The marble mosaics are to consist of twenty-seven pictures. On the north side they represent some of the most famous characters recorded in the Old Testament; and on the south side the Twelve Apostles. Of these there are already placed eight figures:—Joseph in the costume of a ruler over the land of Egypt; Aaron, in his garments as a High Priest, holding in his left hand a censer,—in his right, his rod "that budded"; Moses, with the Two Tables of the Commandments; Joshua, dressed in armour; David, in his kingly robes, the harp in his hand, and in the act of singing the praises of the Lord; Elijah, in his left hand he holds a scroll, upon which are the words "Manus Domini facta est super Eliam,"—"the hand of the Lord was upon Elijah"; and the raven reminds us of the famine in the land of Israel, when the prophet was commanded to "hide himself by the brook Cherith," and "the ravens brought him bread and flesh in the morning, and bread and flesh in the evening"; St. Matthias and St. Bartholomew.

The spandrels of the arches of the nave will contain pictures of angels holding instruments of the Passion. Two are already completed and fixed, and show the hammer, with the pincers and the nails. All the cartoons for these pictures have been made by Messrs. Clayton & Bell.

This, which is a new departure in marble mosaic, is an application of what has been termed *Opus majus vermiculatum*. Sir Digby Wyatt says, referring to marble mosaic:—"Tesseræ are but rarely found on walls, excepting when they are adopted to form flat tints of uniform colour." Indeed, in Mr. Burke's journey through Italy, visiting Venice, Ravenna, Orvieto, Florence, Rome, and Naples, although he found marble tesseræ largely combined with glass or enamel,—especially at St. Mark's, Venice,—the colours were all drabs, browns, and greys. Now, in the marble mosaics to be put up at the Guards' Chapel, there are used marbles and limestones of many colours and tints,—as, for instance, four different shades of greens, three of white, five of red, and so on, and nothing but marbles and limestones have entered into the composition of these mosaics.

In the famous pictures of enamel mosaic in St. Peter's at Rome, the joints are so close that the majority of visitors to the Basilica believe them to be oil-paintings. Every effort has been made to avoid this result in the case of these mosaics at the Guards' Chapel, and joints and tesseræ are clear and unmistakable.

One great feature of this marble mosaic is its comparative cheapness; the price is from 10s. to 25s. per superficial foot,—at the latter price the most elaborate figure-work can be executed.

THE BATH AND WEST OF ENGLAND SOCIETY.

THIS Society opened its 102nd annual exhibition on the 2nd inst. at Exeter, the weather during the early days of the show being most unfavourable. The "ever faithful" city decked her ancient streets with triumphant arches and flags innumerable.

The exhibition itself took place just outside the city, in an inclosed space upwards of 600 yards by nearly 300 yards.

Messrs. F. W. Reynolds & Co., of Southwark, exhibited a fine display of wood-working machinery, nearly thirty pieces of which they had in operation. Amongst these was their new mortising-machine, noticed in the *Builder* for the 31st ult. An improved mortar-mill, with rollers that shift, so that the under-plate be worn regularly, also attracted much attention. Messrs. Polyblank & Co., of Newton Abbot and Dartmouth, showed band and circular saws in motion. The special feature in one of these is the fact that instead of canting the table, and with it the work to be dealt with, the saw itself moves by an elbow, and, by the action of clever though simple machinery, to any angle required with great exactness. This saw, however, whilst of exceptional use to shipbuilders and cabinet-makers, hardly offers the same advantages to the building trade generally. Messrs. Charles Powis & Co., of Millwall, exhibited seven of their saws, five in action. Messrs. Easton & Son, of Exeter, showed some good grooved granite clod-crushers, and fine examples of their Haytor, Moreton Hampstead, and Dartmoor granites. They also exhibited an extremely interesting series of geological specimens of polished Devonshire marbles and granites. Messrs. Candy & Co., of Chudleigh-road, Newton Abbot, showed samples of their tiles, white bricks, and Doulton ware. Mr. W. Parham, of Bath and Oxford-street, Messrs. Granston & Luck, of Highgate-street, Birmingham, and Mr. W. Harding, of Exeter, contributed many samples of their improved greenhouses.

The Fine Art Department was as excellent a one as has ever been brought together under the auspices of the Society, and about 500 pictures, some of them of high merit, were hung upon the walls. Sir Stafford H. Northcote, Chan-

cellor of the Exchequer, and many others, contributed to the loan department. Amongst the water-colours were some clever sketches from Brittany and Normandy, by Mr. R. Medley Fulford, architect. The collection of old china embraced choice specimens of Bow, Chelsea, Derby, Worcester, and Wedgwood ware, and some curious old Liverpool tiles. The display of lace was exceedingly fine. Miss C. B. Cossins, of Broadgate, Exeter, showed beautiful specimens of Honiton lace, and illustrated the mode of working it. The choicest collection, however, was shown by Messrs. Piper & Sons, of Exeter, who, in one of Sage's cases, 6 ft. by 5 ft. by 2 ft., contrived to exhibit nearly 2,000*l.* worth of that precious material. Two point-lace flounces were ticketed at 180 guineas and 150 guineas respectively. Mr. Harry Hems exhibited several samples of his carved work, in the shape of church-fittings; and Messrs. Beer & Driffield showed specimens of their stained-glass windows. Mr. W. S. M. D'Urban, the curator of the Albert Museum, contributed some interesting cases, filled with models illustrative of the injuries to gardens and crops by attacks of destructive British insects.

OPENING OF THE NEW ELEPHANT AND CASTLE THEATRE.

THE Elephant and Castle new Theatre, which replaces the building destroyed by fire some time ago, was opened for the first time on Saturday night, with the performance of a new piece having the appropriate title "Raised from the Ashes." The new theatre is a material improvement upon that which it replaces, both as regards the substantiality of its construction and its internal arrangements. It is considerably higher than the old structure, with greatly increased accommodation in the auditorium department. The pit is said to be one of the largest in the metropolis, having seating-room for an audience of upwards of a thousand, in addition to four rows of stalls in front, having two separate entrances and exits. There is a spacious promenade round the pit, to which there are three exits, two of which are 5 ft. 6 in. in width, and the other—the main entrance—7 ft. wide. A special feature in the building is a saloon 50 ft. in length, on the left-hand side of the pit, looking in the direction of the stage. It does not form a portion of the theatre proper, but is built under the platform of the Elephant and Castle Railway Station. Two of the exits from the stalls and pit, coming out into Caroline-place, at the back of the theatre, are also constructed underneath the platform. The dress-circle is approached from the main entrance in the New Kent-road by a staircase 7 ft. 6 in. wide, and attached to it is a saloon. In addition to the main entrance there are also two exits down fire-proof staircases, on each side of the proscenium. Above the dress-circle there is a spacious amphitheatre and gallery, with several exits. In connexion with the gallery there is a fire-proof staircase at the back of the house, in addition to three separate exits in other places. The decorations have been executed by Messrs. Pashley, Newton, & Young, of Red Lion-square. The principal colour is a pale green, the front of the dress-circle being in satin panels of varied colours. The ceiling is domical in form. The theatre is lighted by a sun-light, containing 206 jets, furnished by Messrs. Berry & Son, of Buckingham Palace-road. The stage is 40 ft. in depth, with a proscenium width of 30 ft., and the entire width of the stage to the main walls is about 67 ft.

The late Mr. Robinson, architect to the Lord Chamberlain, designed the building, which has been carried out under the personal supervision of Mr. Frank Matcham, architect. The original contractors were Messrs. Bracher & Son, of Great Ormond-street, but the building has been completed by Mr. J. H. Brass, of Manor-street, Chelsea.

Domestic Economy Congress.—The annual Congress on Domestic Economy will be held at the Society of Arts' Rooms, on Thursday, 26th June. The following subjects taught in public elementary schools will be discussed in order:—Thrift, Discipline, Cleanliness of the Person; Needlework, Knitting, Netting, Clothing, Health; the Dwelling and its Cleanliness, Ventilation, and Warmth; Food and Cookery; Drill; Gymnastics; Recreation, Music, Games, &c.

THE ART-CULTURE OF THE UPPER CLASSES FROM THE POINT OF VIEW OF AN ART-WORKMAN.

SIR,—The above is a clumsy title to start with, but only indicative, I fear, of the method of treatment; that, again, is partly due to the nature of the subject, partly the result of the writer's view thereof; but, to cut short further preamble,—"to leave such damnable faces and begin,"—I have two propositions to make in this letter, which I respectfully submit to your readers, and will endeavour to establish. Should I succeed, as my presumption and temerity scarcely deserve, then I respectfully opine such propositions to be worthy the attention of the class to whom they are chiefly addressed; and if I fail "I will gain nothing but my shame and the odd hits." My propositions are, first, That the British art-workman has been unjustly treated hitherto by his critics of the class referred to; and, secondly, That such injustice has been mainly due to the general art-ignorance of the said critics. In support of my first proposition I must respectfully affirm that the condition, aims, and objects of the working-classes generally, and art-workmen in particular, in this country are not only not understood in the upper circles yet, but that they are scarcely on the threshold even of such an understanding; and the whole nature and constitution of modern society is a formidable barrier against that closer and broader view of the strata two or three layers beneath them, which prevents that nearer knowledge; and therefore if I seem somewhat aggressive at starting, it is not from any other *animus* than the conviction that we are treated unjustly from ignorance more than indifference, that the "evil is wrought from want of thought as well as want of *art*."

What makes this ignorance so painfully palpable is, among other things, the absurd and contradictory charges they bring against us,—the gross inconsistency of their complaints. We are,—that is, the working classes,—"extravagant and improvident especially; we are coarse and noisy in our pleasures, when we have any, and behind the foreigner now in our work; we lack originality and freedom in the treatment of our work, also technical training for its more skilful manipulation." That much of this is true in detail might as well be candidly confessed at starting; and were yours, sir, a political organ, open to a radical argument, it would be a very easy task to lay the blame of most such regretable facts at the proper doors, which would not be that of the true working-classes; "but such eternal blazon may not be" of flesh and blood, nor can I concern myself generally with the great class in question, but confine my remarks to the section known as art-workmen. I am compelled to reply to the charge, however, with the counter accusation, that the upper, or rather the wealthy, classes have used their superior power, position, privileges, and attainments in the direction of depriving the art-workman of the means of culture, both directly and indirectly, whilst they taunt us with the absence of that which they withhold, arrogating to themselves meanwhile the monopoly of refinement and taste which, did they possess it to anything like the extent they themselves affirm, would by natural or known laws create the demand for excellence in art-work. They accuse us of not being able to supply it, and we retort,—it is not supplied only because it is neither appreciated nor understood, and is only demanded occasionally in sections, and that as the dictate of fashion, and not as the result of a genuine self-cultivation.

But with all our drawbacks and disadvantages, our "negligences and ignorances," some recent exhibitions have conclusively shown that the old spirit that once helped to build up our country's greatness is no more dead in the British workman than the old military prowess is extinct in our modern army and navy. And the fact is undisputed, that there are English workmen with true art instincts and some considerable technical training and experience, working for weekly wages at art drudgery, not because they are incapable of producing good art work, but that they must not, *dare* not,—it is not desired or required of them. And who is to blame for this? Not the employers, I contend: they "but found the system, not made it," and would be too glad in most instances to produce a better article at a better figure; but the blame must rest with the main body of the purchasing public, who, as Ruskin told them long since, "know nothing of art, and care less, but must nevertheless *make believe* to have taste," and get up the greatest artistic effect for the smallest possible outlay. In fact, the spirit of the "veneerings" seems as strong as ever, despite the great Dickens's attempt to write them down in our "Mutual Friend." So impervious to satire is fashionable folly, that I most devoutly believe 99 out of 100 of the well-to-do middle and upper classes, according to Civil Service Stores experience, would rather pay, say, 18s. 6d. per foot for veneer than go the level pound for the solid wood, unless, perhaps, some mahogany merchant could set the fashion for the genuine solid-throughout article. The direct result of this is, of course, that those who cater for them, in the keen competition to supply a meretricious article at a profit, do so by the most rapid mechanical means possible, consistent, of course, with a marketable amount of art-pretence in the article in question.

The effect of all this on the workman, I need scarcely point out, is to effectually handicap him, and prevent him from taking that amount of interest in his work necessary, as Sir S. Northcote pointed out at the opening of the Industrial Exhibition at Westminster, to its success. And I may remark that, conversely, the system complained of puts a premium on all slap-dash work,—work that, technically speaking, must be *knocked-off* to pay,—cultivating and encouraging a class of work more for the immediate profit than the final benefit of the employer, the satisfaction of the purchaser, or the credit, much less honour, of the age or nation that produced it. This phase of the subject was, too, glanced at by the speaker on the occasion mentioned. So, after so eminent an authority as a Chancellor of the Exchequer had expressed his misgivings as to the ultimate *commercial* value even of such productions, it must be accepted without any further emphasis from the writer. Then, if my complaint is at all well founded, it requires very little logic to prove that to limit and restrict the demand for good work is a direct injury to those who live by producing it. Whether the motive be ignorance of the difference between bright brass and dead gold, or a brazen preference for brass on the score of the little gold essential for a great show of it,—and it is purely an aggravation of the offence that the same class of Mammon-worshippers attempt clumsily to shift to our shoulders the stigma of want of taste and ignorance of art,—we suffer materially from their patent poverty in.

Then I have to ask who it is that restrains and restricts the facilities for culture among the bulk of the people, but the governing classes. Who have it in their power to extend the hours of opening of public galleries and museums on the week-days, and on the only clear day a working man has for himself,—*the Sunday*,—and who, for reasons obvious and contradictory, refuse to grant him that essential assistance to a higher culture? Not that we are indifferent to, or ungrateful for, recent concessions in this direction. Nor is there any need to raise here the religious or Sabbatarian difficulty in connexion with this question, but it seems necessary to enlighten the vague conceptions entertained of our condition to get the fact at all comprehended of why we place so much stress on the acquisition of Sunday. This argument, however, was so ably treated by Sir Henry Thompson and other gentlemen at the Sunday Society's meeting, reported in your issue of May 24th (and for whose advocacy I am profoundly grateful), that I would not here presume to do other than supplement it by a few observations suggested by my own special standpoint. It was most powerfully pointed out at the meeting referred to that the Continental workman has great advantages over his insular compeer, but I do not think it has ever been adequately insisted on, what an immense advantage his Sundays alone give him over the English workman. In capitals where art is fully and officially recognised, honoured, and appreciated, where the citizen is surrounded by an atmosphere of it, and interpregnated with its spirit, amongst it, he literally lives and moves and has his being for seven days in the week,—and yet, in the face of this special facility of Sunday, without which his opportunities of improvement would greatly exceed ours, the bishops, and the whole array of their supporters, say to us virtually, "You see these clever foreigners, why are *you* not as proficient as they are? We take care you shan't have half their advantages; why don't you do better without them than they do with them? You waste your precious

Sundays at home and in the public-house. True, it is because we don't consider it good to allow you to go anywhere else, except to church, and if you can't be driven there you shan't go to the picture-gallery or museum, at least *not in London*;—such is our idea of consistency, logic, justice, and common sense." It scarcely needs, sir, the proposition to be thus barely stated to show its utter and indefensible absurdity.

There are one or two other points I consider essential in stating my case completely, but which to touch on now would unduly lengthen this already long letter, so I will thank you for your patience, present and prospective, begging your readers' indulgence, and request them to suspend their judgment on my conclusions, until, in a second communication, I can place before them the "conclusion of the whole matter." J.

PAUL'S CROSS.

AT a meeting of the Society of Antiquaries on the 29th ult. at Burlington House, Mr. F. C. Penrose, surveyor of St. Paul's, read a paper, giving to the Dean and Chapter an account of the recent discovery of the identical platform upon which the superstructure of Paul's Cross originally stood. Mr. Edwin Freshfield presided, and there was an unusually large attendance.

Mr. Penrose commenced by calling attention to the various plans of the cathedral, and of the drawings illustrative of the recent discoveries of Paul's Cross. In the spring of 1878, he said, it was requisite to sink a pit about 12 ft. deep on the south side, and near to the bottom was found a fragment of the foundation, which seemed to belong to the old cathedral, and to the passage from the cathedral cloister to the chapter-house. With the approval of the dean and chapter, search was immediately made for the chapter-house, but without result. On a renewal of the search some evidence of the foundations of the west wall of the south transept was found, and shortly afterwards three or four bays of the cloister. Whilst laying out the proposed garden on the north-east side of the churchyard, the opportunity was given for making an examination towards the east, firstly, in hopes of finding the foundations of Paul's Cross; and, secondly, for some confirmation in regard to the deflection of the axis of the cathedral. The first search was for Paul's Cross, guided by the only plan which marked its site. After one or two trials he came upon some chalk formations, which invited further attention, and on the 31st March last he was repaid by the discovery of a wall 3 ft. high, showing an angle of 35°, and probably belonging to the octagon of which he was in search. The other angles were looked for. One was found, and the rest had been cut away. After a time he came upon the identical platform upon which the superstructure of Paul's Cross originally stood. It was known to be octagonal in form, and the foundation now laid bare exactly corresponded to this form, as correctly as the site corresponded with the drawings and descriptions still extant. The diameter of the octagon was from 37 ft. to 40 ft. from angle to angle, while the pulpit was about 17 ft. or thereabouts. Whatever might have been the remote origin of Paul's Cross, there could be little doubt that the remains were part of the work of Bishop Kempt, who rebuilt it. From this cross, in those days, announcements and harangues on all such matters as were deemed of public concern were uttered,—those being days when there was no printing and little reading. It was used for ecclesiastical purposes for the first time during the reign of Edward I., the earliest record of such employment being in the year 1299. After this they heard of sermons regularly from the cross, and they played an important part during the Reformation. In Henry VIII.'s and Elizabeth's reigns, this pulpit was filled by the most eminent preachers, amongst them being Latimer and Ridley. In 1642 Paul's Cross was demolished. Mr. Penrose then referred to the question of the deflection of the axis of St. Paul's Cathedral, of which he has already given an account in the course of a paper which was read some time back at the Royal Institute of British Architects, and reported in the *Builder*. In conclusion, he promised to lay before the Society the result of any future discovery in connexion with the cathedral.

Mr. Ferrey, in the course of the brief discussion which followed, expressed the interest he felt in the discovery made, which was of great historical value in connexion with the cathedral. His attention, however, had rather been devoted to the other parts of the cathedral, and he would like to ask whether Mr. Penrose had come across any trace of the "substantial western towers" mentioned by Stow. No reference was made to them in Dugdale's works; but it seemed remarkable that in such a great cathedral as St. Paul's there should be no western towers.

The Chairman, in proposing a vote of thanks, said that they were all indebted to Mr. Penrose for his valuable paper. In his description of the discovery of the site of Paul's Cross he had brought back vividly to their minds the sermons that were formerly preached there. It was almost impossible to thank him sufficiently for the persevering manner in which he had carried out his investigations.

Mr. Penrose, in reply to the vote of thanks, which was carried by acclamation, said that as regarded the "western towers" which had been referred to, down to this time the search had not been of a promising character, and although they had got into the very lowest stratum there was not a single atom of masonry to be found. He thought that the western towers could not have existed, from the appearance of the foundations.

THE BRITISH MUSEUM.

THE annual report of the trustees of the British Museum has been presented to Parliament, and issued as a Parliamentary paper. From it we learn that,—

"The following changes have been made in the arrangements affecting the exhibition of the collections in the British Museum, and the hours of admission to the galleries, the reading-room, and the print-room:—In order to prevent the disappointment of intending visitors occasioned by the closing of the museum to the general public on two days of the week, as has been the custom, the trustees have ordered that henceforward the museum shall be opened daily, and free admission be given to all the exhibition galleries, excepting, on Wednesday and Friday, those of Greek and Roman antiquities on the ground-floor, and general antiquities on the first-floor; and, on Tuesday and Thursday, the rooms of natural history; which will on those days be reserved for special students of the collections. The regulation excluding children in arms has been rescinded. With a view to making the collection of the departments of prints and drawings, and of coins and medals, more extensively known and more easily studied, arrangements have been made for exhibiting a greater number of the former and a selection of the latter in the King's Library. Twelve screens for the exhibition of prints and drawings have been added to those already placed there; and on these have been exhibited, in the first instance, a series of water-colour drawings, by J. M. W. Turner, Thomas Girtin, David Cox, William James Müller, and Antonio Canaletto, recently bequeathed by the late Mr. John Henderson, with a set of early and curiously-designed playing-cards, presented by Major-General Augustus Meyrick. These objects will shortly be replaced by a selection of prints illustrating the various schools of engraving. Six table cases and two upright stands have also been placed in the King's Library for the exhibition of English and foreign medals, and electrotypes of the finest Greek and Roman coins. The hours of opening for the reading-room have been extended from five to six o'clock during the month of April; and for the print-room from four to five o'clock from the beginning of April to the end of July. The regulations requiring the renewal of reading-tickets every six months, and of necessarily presenting them at the entrance of the room, have been withdrawn. Experiments have been made with the electric light, by the gratuitous assistance of the Société Générale d'Électricité de Paris, in order to test its applicability to the reading-room. It is proposed, with the sanction of the Treasury, to make further experiments with the electric light towards the close of the year, with a view to its adoption during the winter months. An addition has been made to the entrance-hall, forming a room for the exhibition of the Lycian sculptures, the removal of which from their former gallery of exhibition has given space for an arrangement of archaic Greek sculpture. The upper floor of the addition to the hall has been fitted for the reception of Mediæval antiquities, and will be occupied in the first instance by collections bequeathed by the late Mr. John Henderson and presented by Major-General Meyrick. It is anticipated that a commencement of the removal of the natural history collections may be made before the conclusion of the present year."

The number of persons admitted to the Museum (exclusive of readers) during the year 1878 was 448,516,—a smaller number than has visited the collection in any year since 1873. The number of visits to the reading-room was 114,516, which is an increase over the number of visits in any of the preceding five years. The average number of readers daily has been 392, and each reader appears to have consulted on an average eleven volumes per day. The average time occupied in supplying a book to a reader is stated to have been fifteen minutes.

MEMORIAL FOUNTAIN AT WOOLER, NORTHUMBERLAND.

A DRINKING-FOUNTAIN has been placed in a central position in Wooler, in memory of the late Mr. William Wightman, and in recognition of his services to the town. It is formed of sandstone, and enriched with both red and grey granite. It stands on a base of steps 13 ft. square and 4 ft. high, and is protected by an iron railing round it. It is composed of three stages, and rises to a height of 17 ft. The lowest stage steps up from the base in five gradations of chamfered plinths, till it is narrowed from a square of 5 ft. 5 in. to one of 3 ft. about 5 ft. above it. On two of the fronts of this graduated mass of solid white sandstone masonry are two ornamental corbelled drinking-troughs, into which the water flows through the mouth of a bronze lion-head. The second stage is an open arcade supported by red granite columns at the angles, with richly carved stone caps and bases, and four cusped trefoiled arches. Upon these spring a canted octagonal canopy. In the centre of the open arcade a fountain base is placed, with carved caps and base, out of which there flows a perpetual spring of mountain water brought from the neighbouring Cheviot hills by gravitation. The canopy is also enriched with carved foliated ornament. The third stage is square. It has couplets of grey granite columns at the angles, which support a cruciform canopy, having four gables corbelled out with a trefoliated cusped arch in each, above which is a spirelet finished with a floriated finial. The four gables are crocketed, and each is surmounted by a moulded finial. The style of the design is Edwardian, in keeping with the numerous castellated remains of that period in the county. Although richly ornamented, the memorial is sufficiently massive in its treatment and substantial in its workmanship to withstand the "Cheviot blasts," or winds with which the district is visited in tempestuous weather.

The fountain has been executed by Mr. Daniel Mac Millan, Alnwick.

ELECTION OF A DISTRICT SURVEYOR.

THE election of a District Surveyor for the district of Putney and hamlet of Roehampton (in the room of the late Mr. Horace Field) took place on the 30th ult. at the Metropolitan Board of Works. There were twenty-six candidates, and these, in accordance with the usual practice of the Board, were each voted upon in the first instance with the view of reducing the number of candidates to six. The following is a list of the candidates, with the number of votes obtained by each in the preliminary voting, viz.: Badock, J. B., 4; Bridgman, H. H. (too late); Brooks, B. W., 11; Burden, R. H., 6; Carritt, E., 17; Conder, A., 13; Edmeston, J. S., 14; Ferguson, J. M., 9; Hammond, F., 21; Hewitt, E. R., 0; James, J. W., 20; Large, W. A., 14; Lovegrove, H., 0; M'Donell, G., 14; Notley, F. C. 14; Payne, A., 27; Quilter, J. S., 5; Smallpiece, W., 7; Stone, T., 6; Street, E., 22; Tasker, W., 23; Todd, F., 10; Turner, J. G., 10; Williams, T., 17; Willis, T. W., 27; and Young, J., 14. The six condidates receiving the highest number of votes were therefore found to be Messrs. Hammond, James, Payne, Street, Tasker, and Willis. The further voting was as follows:—

	Second Vote.	Third Vote.	Fourth Vote.	Fifth Vote.	Final Vote.
Hammond.....	16	—	—	—	—
James.....	17	11	—	—	—
Payne	23	21	22	23	17
Street.....	17	17	10	—	—
Tasker	19	19	18	16	—
Willis.....	26	26	25	24	26

Mr. Willis was therefore declared to be duly elected.

SCIENCE AND ART IN IRELAND.

WE learn from the Dublin *Freeman's Journal* that "the committee for promoting an inquiry into the South Kensington 'management' of science and art in Ireland have submitted, for the consideration of all interested, a report. The report charges against the South Kensington authorities that they have managed the Dublin College of Science in a careless, unscientific, and extravagant manner." The report then branches into the case of Professor Galloway, and concludes as follows :—

"Injustice to an individual has led to the opening up what we hope will be considered an important inquiry in a public point of view. It is to be hoped the inquiry will be vigorously prosecuted by those who represent Ireland in the Imperial Parliament. If it should be found that money is wasted at the Royal College of Science, many means for the useful application of the money to Irish purposes may be found. Four thousand pounds saved at Stephen's-green might be made available, for example, for artisans' drawing or science schools, and, on the general question of South Kensington *versus* good, honest local management, the time spent in inquiry would be well employed. Professor Galloway, during his twenty-three years' residence in Dublin, has warmly interested himself in Irish affairs; his students, his laboratory, and some local improvements occupying all his time. In the discussion of the Vartry water question in 1861 Mr. Galloway and his assistant, Mr. Plunkett, took an active part. No less active were they and their laboratory students in considering the question of Dublin main drainage. Mr. Galloway was one of the directors of a chemical enterprise at Galway, intended for the development of Irish resources by teaching our people the profits to be derived from the extraction of iodine from kelp. He laboured well and successfully for the instruction and advancement of his students. Irishmen are not ungrateful. They cannot see this man sacrificed without a fair trial. South Kensington was prepared to pension him in 1862, and this year he had but to obtain a medical certificate to be recommended to the Treasury by 'my lords' for a retiring allowance. He has refused those offers, demanding justice and nothing more. This is the issue between him and a department known to us in Ireland only by its intrigues, by its waste of public money, and by its general indifference to our wants and wishes."

A SUGGESTED SCHEME FOR THE DECORATION OF THE DOME OF ST. PAUL'S.

A CORRESPONDENT of the *Times*, writing from Florence on the 28th ult., says :—"The attention of the artistic community in Florence has just been very strongly called to a proposed contribution towards the solution of the problem how to finish Sir Christopher Wren's great work, London's St. Paul's, in the shape of a suggestive design for the decoration of the interior of the dome, the joint work of Charles Heath Wilson, so well known to English visitors to Florence for many years past, and to England as the author of 'The Life of Michael Angelo,' and for his long labours in connexion with art and art-teaching, and R. P. Pullan, the well-known architect. It is understood that the design is volunteered, and is rather the result of strong interest in the work the St. Paul's committee have before them, and is intended rather as an idea for bringing together the designs of the artists whom the committee propose to employ, than for displacing them, the suggestion being limited to the central idea, leaving the details of design to the respective artists. Messrs. Pullan and Wilson have for many years, each in his own way, made a special study of architectural decoration, and the principle to which they adhere, and of which their design is an exemplication, is, that in all such work the architectural unity should be made the *sine quâ non* of the employment of pictorial appliances, and that the painting or sculpture should distinctly be conformed to the architectural composition. This was unquestionably the case with the Greeks and with Michelangelo, as well as with the Byzantine masters. If this be sound, the collection of a series of pictures by different painters, whether of a symbolical or realistic nature, disconnected in subject, and not tied together by some decorative design, would, however fine the art of each separate work, be inferior to a decorative whole, however inferior the parts, so long as in their whole the architecture itself found an illustration and an illumination. The theme chosen by Messrs. Pullan and Wilson is the *Te Deum*. The dome is divided into eight sections by broad decorated ribs, painted and moulded, and the rib panels filled with arabesques in monochrome. At the bases of the ribs are eight thrones, on which are seated as many prophets. The thrones are architecturally designed, with cornices, pilasters, and niches. Over the cornice of each, to carry the human element into even the design of the ribs, stands an angel erect. The ribs terminate at their summits in foliated capitals united by arches, surmounted by frieze and cornice with pendentives. Between these ribs an architectural composition runs round the dome to support, divide, and facilitate the grouping of the human and angelic figures which form the dominant element of the entire design. The Evangelists that already occupy the spandrels will be included in this plan. The dado contains a decorative design, and in the podium above it are ranged the martyrs, the drum or tribune, as it is here called, beneath the dome not being included in the present design; but, if this were accepted, it is proposed to include the drum in the system, and arrange it with a series of men of all nations representing the Church,—'The holy Church throughout all the world doth acknowledge Thee.' Then would come the Martyrs,—'The noble army of Martyrs praise Thee.' In the colonnade above the podium are eight Apostles, each (omitting the Evangelists already there) under a baldacchino and seated on a throne, continuing the theme,—'The glorious company of the Apostles praise Thee'; and above the architecture the hollow space of the true dome contains figures of angels rising and vanishing in space, and still above them, around and beneath the lantern, are cherubim and seraphim, while in the cupola of the lantern is the Lamb. The design prepared by Messrs. Wilson & Pullan is of one section, the eighth of the project, and the figures are intentionally borrowed from the best known representations of the old masters, it not being their intention to suggest them as the designs for the individual figures, which will be left to the artists charged with carrying out the suggestion contained in the illustration of the *Te Deum*, both the idea and the design of which have been met here with warm approbation by the native artistic as well as the foreign *dilettante* element of our society. If the purpose to be accomplished is rather the decoration of an architectural work than forming a gallery of pictures and designs, there can be no doubt that the design under notice gives a consistent and comprehensive plan. I believe it is the intention of the artists to send the design to London shortly, in order to offer it for the consideration of the committee for the completion of St. Paul's."

A DISPUTED AWARD.

CORPORATION OF BIRMINGHAM *v.* WEST BROMWICH IMPROVEMENT COMMISSIONERS.

THIS case, which was before the Queen's Bench Division of the High Court of Justice last week, involved a question of considerable importance, arising out of the dispute between the Corporation of Birmingham and the West Bromwich Improvement Commissioners as to the amount to be paid by the Commissioners to the Corporation for a transfer to the Commissioners of certain powers and undertakings vested in the Corporation for the lighting of the district with gas; and the controversy had arisen in these circumstances :—

In 1875 the Corporation obtained an Act for the transfer to them of the undertakings of the Birmingham Gas Company and the Birmingham and Staffordshire Gas Company, the former of which then supplied with gas the town of Birmingham, and the other supplied not only the town, but the district twenty miles around it, including among others the district of West Bromwich, a clause being introduced giving the local authorities of these various districts the power to purchase the works of the Staffordshire Company situate in West Bromwich; and this clause also enabled the local authority of each district to purchase the portion of the undertaking within its own district for a rateable proportion of the whole sum paid by the Corporation to the Staffordshire Company, the Corporation, however, retaining the West Bromwich works, the amount payable being referred to arbitration. An arbitration accordingly took place, Mr. Bramwell and Mr. Hawksley being the arbitrators, and Sir H. Hunt the umpire, with Mr. Wills, Q.C., as their legal assessor. They sat twenty-six days, and took evidence and heard counsel at great length, the question being as to the mode or principle of valuation. It was contended on the part of the Corporation that the object was simply to find out the value to them of the thing to be sold, and that they ought to be compensated for what they were about to lose, *i.e.*, a part of their general or combined gas undertakings, made up of the undertakings of the Staffordshire and Birmingham companies transferred to the Corporation, with all the advantages resulting from the union and the economical and improved management of those undertakings in the hands of the Corporation, and that the basis of valuation was the amount of profit annually realised at the Staffordshire works, which supplied all the suburban districts, and that then West Bromwich should pay its proportion of that amount. Upon this principle the valuation of the West Bromwich portion of the gas undertaking to be transferred would be from 258,000*l.* to 318,000*l.*

On the part of the West Bromwich Commissioners, it was contended that this principle of valuation was utterly wrong, and that the thing to be purchased was only a part of the Staffordshire Company's undertaking; that as the works at West Bromwich were not to be sold by the Corporation, but retained by them, the value of those works was not the true basis of the valuation; and that the true basis was the intrinsic value of the part of the Staffordshire undertaking to be taken by West Bromwich. On this principle the valuation of the sum to be paid by the Commissioners would amount to 58,000*l.*—a difference, it will be seen, of about 200,000*l.*

The arbitrators differed in their views, and the umpire, Sir H. Hunt, fixed the amount to be paid at about 70,000*l.*, setting forth on the face of his award the principle of valuation he had adopted, and which was rather in accordance with the contention on the part of West Bromwich, in order to enable the Court to correct it if it were wrong. This was an application on the part of the Corporation to set aside the award, on the ground that it proceeded upon a wrong principle of valuation.

The Court (the Lord Chief Justice and Mr. Justice Mellor) gave judgment upholding the award.

COMPENSATION CASE.

BUTLER AND ANOTHER *v.* THE METROPOLITAN BOARD OF WORKS.

AT the Middlesex Sheriffs' Court, on the 29th ult., the case of the Hon. C. Lennox Butler and another *v.* The Metropolitan Board of Works was heard before Mr. Under-Sheriff Burchell and a special jury. The claim was 6,830*l.* for the freehold house, No. 2, Nassau-street, Soho, which had been used as the Hôtel de la Cloche, and was now required for the formation of the new-street from Piccadilly to Oxford-street.

The witnesses on both sides were conflicting in their views of the value of the property. The highest value was over 5,000*l.*, and the lowest value on the same side, with the 10 per cent. allowed for compulsory sale, 3,896*l.* On the part of the Board the value was represented as 2,931*l.* All their witnesses fixed it under 3,000*l.* The lease would expire in 1887, and the property would then be worth an additional 20*l.* a year, making the rental 140*l.*

Mr. Under-Sheriff Burchell left it to the jury to decide the value, on the conflict of testimony, in the best manner they could. They had seen the property, and had heard the evidence of both sides.

The jury, after a brief consultation out of court, assessed the compensation at 3,500*l.*, which, they said, included the 10 per cent. for compulsory sale.

PUBLIC WORKS ABROAD.

British Guiana.—Steps are being taken to extend the railway accommodation in this colony by the construction of a line from Georgetown to Berbice, and the Government is engaged in the execution of important works for the extension of the sea-wall at Georgetown, for drainage improvements, and other sanitary measures.

Ceylon.—The Colombo correspondent of the *Times* writes, under date May 3 :—"Our breakwater works have made small progress during the past working season, from October to April, owing to the unusually unsettled state of the weather. In the next north-east monsoon it is hoped a sufficient length of arm may be completed to allow of steamers anchoring inside in all weathers. It is understood that instructions have reached our Government from the Colonial Office to give every possible encouragement to local contractors in the execution of public works, as a means of effecting a saving in cost. At the same time I hear that all public expenditure will be cut down with an unsparing hand in view of the badness of the times and anticipated decline in the revenue."

The Institution of Civil Engineers.—At the last meeting of the session, held on the 27th of May, the president, Mr. Bateman, F.R.S., being in the chair, the paper read was on "Dock Gates," by Mr. A. F. Blandy, C.E. The author commenced by defining the general features of a pair of gates and their surroundings; then passed on to the strains to which a gate was subject, and gave a formula for the pressure per unit of length. The magnitude and direction of the primary forces acting on the pair of gates were investigated, and it was shown that a point could be found on the centre line of entrance, the distance of which from any point on the back of the gate was proportional in magnitude to the resultant of all the forces acting on a section taken through the gate at the point measured to. It was also shown that, in practice, the line of position of these resultant forces in most cases corresponded with the arc of a circle drawn through the centre of the heel-posts and of the meeting faces of the mitre-posts.

THE COACHMAKERS' COMPANY'S PRIZES.

IN reply to the offer of prizes for freehand or mechanical drawings, and drawings of carriages or parts of carriages, to the scale of one inch to the foot, there were thirty competitors in all, with eighty-six drawings, thus classified,—forty-six freehand or mechanical drawings, and twenty-two carriage drawings. Some of the competitors sent in both freehand drawings and drawings of carriages to scale. The court have awarded the prizes as follows, namely:—For freehand or mechanical drawing.—1st prize,—among former prize-winners and others, and no limit as to age,—the Company's Silver Medal and 3*l.*, with the Company's certificate, to Mr. William Farr, of Castle-street, Salisbury. 2nd prize,—excluding former prize-winners, and no limit as to age,—the Company's Bronze Medal and 2*l.*, to Mr. George Mundy, of 1, Cambridge-street, Spittlegate, Grantham, Leicester. 3rd prize,—for apprentices and others under twenty-two years of age,—the Company's Bronze Medal and 1*l.*, with the Company's certificate, to William Thomas Easton, of 39, Commercial-road, Portsmouth, apprentice to coach-painting. The Company's Certificates of Merit were awarded to Edward Atterby, of Huntingdon, an apprentice to coach-smithing; to Henry Hewer, of 92, High-street, Southampton, coach-body maker; to Walter Reynolds, 37, Tulloch-street, Scotswood-road, Newcastle-upon-Tyne, coach-body maker's apprentice; and to Robert Davies, of 36, St. Julian's Friars, Shrewsbury, apprentice to coach-smithing. For drawings of carriages, or parts of carriages, to the scale of one inch to the foot:—1st prize,—among former prize-winners and others, and no limit as to age,—the Company's Silver Medal and 3*l.*, with the Company's certificate, to Mr. J. P. Lake, of No. 1A, Howick-place, Victoria-street, Westminster. 3rd prize,—for apprentices and others under twenty-two years of age,—the Company's Bronze Medal and 1*l.*, with the Company's certificate, to Herbert H. Mulliner, of Hawey-villa, Leamington, Warwickshire, clerk.

The prize drawings have been exhibited in the hall of the Mansion House by permission of the Lord Mayor, and in addition a very interesting collection of books, engravings, and carvings connected with the trade and its art. It deserves note in our pages that the present Master of the Company is an architect, — Mr. Frederick Chancellor.

QUANTITIES AND CONTRACTS.

SIR,—I have read with much interest Mr. Honeyman's paper on "Quantities" as reported in the *Builder*, and would like to take exception to some of his statements anent the Edinburgh system, which are apt to be misleading to those unacquainted with it.

In speaking of the Edinburgh style of contracting, he says, "Third. The schedule is lodged with the architect, with the various items summed up and cashed." Mr. Honeyman is wrong in stating the above. The offers are first lodged in writing; then the architect, in accepting the tender of the successful contractor, which he does on behalf of the proprietor, sends him a blank schedule to fill in the rates for the different quantities and the sum total which corresponds with his tender. The contractor, in returning the schedule thus made up, signs it as relative to his offer, and retains the one from which his estimate was first made up.

In criticising the Edinburgh method of measuring, Mr. Honeyman went far astray, and cast a slur on the Edinburgh surveyors in saying, "The measurer may double the number of cubic feet in stone foundations" (Mr. Honeyman is, perhaps, not aware that foundations of all kinds, whether stone or brick, are measured, by the Edinburgh mode, by the superficial foot, stating thickness). Such a mistake might take place in Glasgow; I never heard of it occurring in Edinburgh. There is no such practice here as the contractor making an allowance for contingencies on account of any presumed errors in the schedule.

The Edinburgh contractors have the utmost confidence in Edinburgh surveyors, all of whom are gentlemen of unimpeachable character and integrity in their profession. For an Edinburgh surveyor to subscribe his name to his measurements, is a guarantee for their correctness that no Edinburgh contractor would gainsay.

How the proprietor is a loser in paying the contractor for the measuring is more than my humble judgment can make out. It surely makes no difference whether the proprietor or the contractor pays the surveyor? The proprietor must pay in the end, either directly or indirectly. If the contractor employs a surveyor to measure the work he will add the fee for the same to his estimate. The fees must be got out of the work, *i.e.*, out of the proprietor, who pays for the work.

I fail to see the superiority of the Glasgow mode over that practised in Edinburgh. So far as I know, the system pursued here gives every satisfaction to those concerned.

The architect must be very lax indeed to allow a contractor to proceed without a specification, as Mr. Honeyman defines to be the Glasgow system.

In Edinburgh, the contractor always tenders to act up to the specification, which is generally embodied in or referred to in the schedule.

I trust that when the next discussion comes up before the members of the Institute of British Architects they will be more able to enter into the details of the different systems as exemplified in Mr. Honeyman's paper.

J. A. E.

ST. MILDRED'S, BREAD-STREET, CITY.

SIR,—In the *Builder* we have had some very interesting notices of this City church. Many of your readers, I am sure, thank you. You especially mention the church of St. Mary Abchurch, Cannon-street (now under repair). I know the church very well, with its beautiful domed ceiling painted by Sir J. Thornhill, of famous memory. But, sir, I very much doubt if the extreme beauty of the interior of St. Mildred's is not quite equal to that of St. Mary Abchurch, in respect of the richness of its oak carvings and the plaster-work of the domed ceiling. Indeed, I am inclined to think that the beauty of the oak carving of the pulpit and the sounding-board, and of the noble brackets and wreath of fruit-work round the domed ceiling of St. Mildred's, far excels that of the work at St. Mary Abchurch.

I am using every influence I possess to bring this beautiful interior of St. Mildred's, Bread-street, before the public.

R. P.

MASTERS AND MEN.

Barnsley.—The strike in the Barnsley building trade has been settled, the masons and bricklayers agreeing to accept 7¾d. per hour and work fifty hours per week during summer, the winter period to be regulated by the Leeds hours. The labourers also agreed to accept 5¼d. per hour, and work the same hours as the masons. The rate of payment in all cases is to be by the hour instead of by the day, as hitherto.

Bristol.—In November last, the master builders of Bristol gave six months' notice of a reduction of a halfpenny an hour, and the men had fully determined to resist and to come out; but when paying the wages on Saturday last, most of the employers told their men to come in after the Whitsuntide holidays on the old terms. Some of the masters adhere to their resolution, and their men will remain out on strike if during the holidays these employers do not adopt the course of the majority.

Northampton.—The dispute in the building trade of Northampton has been terminated. The men recently went out on strike against a proposed reduction of wages from 7½d. to 7d. per hour; but some of the men having gone in at the reduced rate, the others have returned to work, it being understood that each *employé* would henceforth make the best terms he could with the employers—obtain 7½d. if he could; otherwise accept the 7d.

Wallasey.—A strike has taken place among a portion of the bricklayers employed by the Wallasey builders. All the other branches—masons, plasterers, plumbers, and joiners—are working. The strike is stated to be for the purpose of obtaining a reduction of hours.

Newsvendors' Benevolent and Provident Institution.—The annual dinner is fixed to be held at Willis's Rooms, St. James's, (this) Saturday, 7th June. Mr. William L. Thomas, Managing Director of the *Graphic*, will preside, and will be supported by many eminent men. It is a most deserving institution.

WEYMOUTH DRAINAGE.

CORPORATION OF WEYMOUTH *v.* BETTS & CO.

THIS case (to which reference has already been made in the *Builder**) was before the Queen's Bench Division of the High Court of Justice on the 26th ult. It raised a curious question as to a charge against a local board of health for a violation of the sanitary regulations established under the Public Health Act.

The Town Council of Weymouth, who are the Local Board of Health for Weymouth, had made a charge against Messrs. Betts, of that town, for keeping up a nuisance on a part of their premises; and Messrs. Betts made a cross-charge against the Board for a nuisance alleged to arise from their causing the sewage of the town to flow into a certain place. Upon the charge made by the Local Board Messrs. Betts were convicted, but they the other day succeeded in getting the conviction set aside in this Court upon the ground that some of the magistrates who sat on the hearing of the case were members of the Town Council. The cross-charge by Messrs. Betts against the Local Board was made against them as owners, but it appeared that, though the Town Council were owners of the place on which the nuisance was alleged, they were not owners as the Local Board, and, as they alleged, did not occupy the place, so that they were not liable as the Local Board, either as owners or occupiers, and the magistrates dismissed the charge. This was an appeal by the complainants to this Court.

Mr. Channell, for the appellants, the complainants, contended that under the Public Health Act, 1875, secs. 94 and 103, the Local Board might themselves be liable for causing or keeping up a nuisance.

Mr. Pitt Lewis, on the other side, contended that the Local Board had been charged in this case as owners and occupiers, whereas they were not, as the Local Board, liable as owners or occupiers.

The Court (the Lord Chief Justice and Mr. Justice Mellor), without at all doubting that under the enactments referred to the Local Board might be liable for a nuisance to health, said that in the present case, as they had been charged as owners, the charge could not be maintained, and so they dismissed the appeal, leaving the complainants to take out a different summons, and, as all parties appeared to have been wrong, they dismissed the appeal, without costs.

DRAINAGE AND SEWERAGE WORKS.

Salisbury.—The Town Council of Salisbury is about to carry out a scheme for the disposal of the sewage of the city, and to take steps for the compulsory purchase of the land required for the purpose. The scheme, which has been submitted to the Local Government Board, involves a sewage farm.

Alcester.—An adjourned meeting of the Alcester Rural Sanitary Authority was held on the 27th ult., when the Board visited the sewage beds, where they were met by the engineer and contractor. On arriving at the reception tank, the engineer, Mr. E. Pritchard, gave a short explanation of the works. The contractor is Mr. George Law, of Kidderminster. The cost of the works, with engineering expenses and extras, amounts to nearly 3,000*l.*, which at 3½ per cent. for fifty years would make an annual payment of 127*l.* 18s., or for thirty years 163*l.* 14s. 3d. Mr. Pritchard called upon the Rev. C. Dolben, as Chairman of the Authority, to let the sewage on the beds, and which appeared to work admirably, the beds being laid out in sections, and provided with a number of small tanks in addition to the receiving tank. Previous to turning the sewage on, the Chairman remarked that the Sanitary Authority had a great deal of anxiety and trouble in considering the best and most inexpensive scheme, and at length carried out the one now completed. There was considerable expense attending the works, and he hoped they would now prove successful, and that the town would be benefited. Mr. Pritchard explained that great obstacles had been removed and much expense saved by Lord Hertford allowing them to go upon his land so near to the town, which was a great advantage.

Lichfield Cathedral.—The Dean and Chapter of Lichfield have issued a photo-lithograph of that part of the west front of the cathedral which is in process of restoration, showing the places of the figures—fifty-four in number,—which they hope to introduce, but which are not included in the contract. The average cost is estimated at not less than 45*l.* each, but those which it is proposed to place in the higher stage of the tower may probably cost somewhat less. The Dean and Chapter invite offers for such figures, and their choice will be left as far as possible to individual donors; but for the sake of securing uniformity of plan, the selection of the sculptors and the arrangements of the plan must be left to the cathedral authorities.

* See pp. 435, 467, and 526, *ante*.

Miscellanea.

Is there Anything in It?—The Berlin correspondent of the *Daily Telegraph* writes:—"The Chinese ambassador at the Berlin Court, Li-Fang-pao, is famed among his countrymen in the Flowery Land as one of the most eminent among their learned men. He has not neglected the opportunities which his travels in Europe have afforded him of making himself acquainted with the details of Western civilisation. The fruits of his observations have, in one instance at least, been most remarkable, and will perhaps open a new and wide field for antiquarian research. Li-fang-pao has been examining the remains of Grecian pottery of the Trojan and pre-Trojan period, and has made a valuable and interesting discovery. He proves that the vases found in Trojan territory, and buried or imbedded in excavations dating from pre-Trojan ages (such as those referred to by Schliemann on page 50 of the introduction to his book), are really of Chinese origin. On one of these vessels Li-Fang-pao finds an inscription to the effect that about 1,200 years before the Christian era some enterprising individual had enclosed in the vase three pieces of muslin, and despatched them for inspection. It seems, therefore, that this piece of pottery, at all events, significantly records the fact of the commercial intercourse which existed so far back as the pre-Trojan era between the industrious natives of Cathay and the enterprising merchants of Asia Minor and Greece."

Submarine Telephony.—Mr. Raymond, an engineer in New York, recently read a paper before the Society of Engineers in that city, in which he described some improvements he had made in using telephones in diving operations. According to the *Electrician*, the arrangement first employed consisted of two Phelps telephones, which, being oval and flat, are convenient for this purpose. One of these was fastened in the diver's helmet, in such a position that by simply turning his head the diver could place his mouth or his ear to the instrument. The other was placed on the scow which carried the assistants and the air-pump; and the two were connected by means of insulated wires inside the air-hose. This was found to work very well, so far as communication from the diver to his helper was concerned; but there was difficulty in sending messages the other way, since the bubbling of the air as it escaped from the helmet into the water interfered with the diver's hearing of the telephone. This difficulty was overcome by the use of Edison's "carbon-transmitter," which rendered the sound so much more audible that conversation could be carried on with the utmost facility. It was found that the diver could talk in the helmet without putting his mouth to the instrument, and be heard plainly, so that work and conversation could go on at the same time. The saving of time effected by this means is considerable.

Projected Improvements at Aberdeen.—A sub-committee of the Aberdeen Town Council are maturing a scheme for the improvement of the city by opening up new thoroughfares. A report by Mr. M'Kelvie, city assessor, shows that the cost of the properties affected by the projected new streets and improvement of existing thoroughfares is estimated at 288,000*l.* Including the expense of laying out the streets, the improvements will cost probably close on half a million sterling. It is proposed to straighten the end of Skene-street and the communication with School-hill by cutting away the block of houses known as Black's Buildings; to form a line of communication from Union-terrace to Baker-street and on to Skene-square; to form a curved thoroughfare *viâ* Wallace Neuk from the corner of St. Nicholas-street up to the top of Broad-street, facing the Marischal College; the extension of Union-street to the Links; a line of street from Castle-street to Shore Brae; the widening of Correction Wynd, &c. At the other side of the city it is proposed to widen Fonthill-road and St. Machar-place.

Bradford Art Gallery and Museum.—An art gallery and museum has been opened at Bradford, by the Mayor, in connexion with the Bradford Free Library. The collection of pictures has been insured for the sum of 150,000*l.* They have all been contributed by their owners in Bradford and the immediate neighbourhood,

Sanitary Institute of Great Britain.—The annual meeting of this society was held on the 29th ult., at the Rooms of the Society of Arts, John-street, Adelphi, Dr. B. W. Richardson in the chair. The report showed that four examinations had been held under the direction of the council for local surveyors and inspectors of nuisances. Twenty-six candidates had presented themselves, of whom twelve wished to obtain certificates of competence as local surveyors, and fourteen certificates as inspectors of nuisances. Five surveyors and thirteen inspectors of nuisances had gained certificates, and seven surveyors and one inspector of nuisances had failed to satisfy the examiners. Sixteen candidates had expressed an intention to present themselves for the next examination, in June. By what right this society has constituted itself an examining body we have still to learn. On the motion of Dr. Lory Marsh, who was supported by Dr. Russell, of Edinburgh, and Capt. Douglas Galton, a resolution was carried suggesting that the council should proceed with as little delay as possible to carry out that part of the basis of constitution which related to the establishment of a school and classes for the technical teaching of sanitary science.

A Patriarch of the Press.—The *employés* of the *Macclesfield Courier* newspaper, together with the workmen in the bookbinding and general printing departments, have been celebrating the eightieth birthday of Mr. J. Swinnerton, J.P., the proprietor of the newspaper, and the senior partner in the general business. Many of the staff have been upwards of forty years in Mr. Swinnerton's employment, and the whole had testified their hearty congratulations to their honoured employer by presenting him with a brief *impromptu* address, significant of their respect and good feeling. It was mentioned as a noteworthy fact that Mr. Swinnerton is one of the oldest,—if not, indeed, the oldest newspaper proprietor in England, having been for more than fifty-one years proprietor of the journal of which he is the head, and which has long enjoyed the reputation of being one of the best provincial papers in England.

Worthily Honoured.—We are much gratified by the announcement that the Queen has been graciously pleased to confer the honour of knighthood upon Mr. Henry Bessemer. The honour has been worthily won, though somewhat tardily awarded. Mr. Bessemer's inventions have been numerous and valuable, and his name will ever be indelibly associated with the history of the steel manufacture. In 1856 he read before the British Association, at Cheltenham, his first paper on the manufacture of malleable iron and steel, which has given him a world-wide name,—literally so, for the Americans have christened after him a thriving new town on the Cincinnati Railway, and "Bessemer metal" has become current in most of the languages of civilised communities.

Imitation Ivory.—Harris's patented imitation ivory is made by dissolving 100 grammes of glue in 1 litre of water, 50 grammes of alum in 1 litre of water, and mixing 50 grammes of good bleached cellulose with 3·5 litres of water. The moulds are carefully oiled with a mixture of equal parts of goose-grease and lard; then a mixture is formed, in an earthen vessel, of 75 grammes of the glue solution, 200 grammes of the cellulose water, 200 grammes of water, 250 grammes of finely-sifted gypsum, and 200 grammes of the alum solution. This mass is placed in moulds by a spoon, shaken so as to remove bubbles, and left to set and thicken. It is then removed from the moulds, covered with a woollen cloth, the superfluous water pressed out, and, after it has completely stiffened, the fat is removed by hot water. It is then dried and soaked in a hot mixture of equal parts of wax and stearine. After cooling, it is brushed until the ivory lustre shows itself.—*Dingler's Journal.*

Roman Antiquities.—The *Cologne Gazette* states that the Villa of Marioweiler, near Dueren, has turned out to be a mine of Roman ruins. Enough of the villa has now been laid bare to allow of the apartments of the bath being marked off with considerable precision,—viz., the tepidarium, the caldarium, and the frigidarium. A part of the stove and of the hot-air clay pipe has also been excavated. A tile bearing an inscription has likewise been found. It is not yet definitely deciphered, but seems to bear the date of the eleventh year of the reign of Augustus,—that is, 19 B.C.

Arsenical Wall Papers.—Mr. Bernard Dyer, public analyst, writes:—"I have received for examination a large number of wall-papers of various textures, patterns, and colours, but consisting chiefly of the fashionable dull olive or sage green papers now so much in vogue for what is known as the 'Dado' style of decoration. Out of some three dozen samples that have been handed to me for analysis during the last few weeks, I found scarcely half-a-dozen free from arsenic. To avoid misapprehension, I would observe that the presence of arsenic was by no means confined to the green papers, for among the worst specimens were samples of various other shades, including light blue and sombre brown. The makers, when remonstrated with, have in one or two cases denied that they intentionally introduced arsenic into their papers, but complain that the poison exists as an impurity in the pigments they receive from the colour manufacturers, who, they allege, will not take the trouble to free their colours from the arsenic which is introduced into them in the course of manufacture, and which ought to be removed before the finished dyes are sent out. That papers of the most brilliant tints may be produced perfectly free from arsenic is now well known. I need not take up your space by more than alluding to the serious consequences that may accrue, more especially to delicate persons, from sleeping in or habitually occupying rooms hung with arsenical papers."

Revenues of the City of London.—The *City Press* publishes a return which has been submitted to the Common Council of the rents and revenues of the City for the year 1878. The principal items are leases of City property, 96,198*l.*; leases in Middlesex and Surrey, 16,474*l.* 18s.; rents of dwellings for the labouring classes, 3,297*l.*; fines for the renewals of leases, 3,552*l.* 13s.; markets, 140,797*l.*; metage of corn and fruit, 3,042*l.*; brokers' rents and fees, 9,572*l.*; justiciary fees, 1,475*l.*; reimbursement on account of prisons, 4,053*l.*; reimbursement on account of criminal prosecutions, 1,424*l.*; Lord Mayor's Court fees, 7,382*l.* 10s.; officers' surplus fees and profits, 3,283*l.*; reserve fund towards reducing amount overdrawn, 30,000*l.*; cash received on the renewal of market loans, 716,189*l.* 15s.; with other items amounting to 1,044,880*l.* 9s. 11½d. In addition to this the rents and profits of the Bridge House estates amount to 60,713*l.* 5s. 5d.

Vestry Halls in the East of London.—Mile-end, Shoreditch, St. George's, Limehouse, and Poplar can all boast of a suitable meeting-place for their local parliaments, and all of them, excepting Limehouse, pride themselves upon being in a position to afford accommodation for large gatherings of the ratepayers in capacious halls attached to their parochial buildings. Before very long two other parishes, Bromley and Limehouse, will have to be added to the list of those parishes possessing this accommodation. For in Limehouse the site of a new town-hall has long been awaiting the building to be erected on it, and at the present time tenders are being received for the erection of the building that has been designed by the Messrs. Harston. In Bromley matters are more advanced, for there the foundation-stone of a new Vestry-hall was laid on Tuesday, May 27th, by Mr. Churchwarden Langdon. The new buildings will be erected from the designs of the architects already named. It will cost 5,300*l.* The builders are Messrs. Cocks & Co.

Charge against a Surveyor.—At the Chapel-en-le-Frith Petty Sessions, on the 22nd ult., Joseph Trueman, of the Mechanic's Arms, Manchester, who had resided in Bugsworth, was charged with contravening the Highways Act, by not having delivered up all books and accounts pertaining to his office as surveyor, and also with not paying over the balance of certain moneys (36*l.* 4s. 6½d.) to his successor in office, William Ashby. Defendant was fined 1*l.* and costs, and an order was made for payment of the balance, 36*l.* 4s. 6½d.; in default a distress would be levied, or three months' imprisonment would be imposed.

Sewer Scandals in Liverpool.—At the meeting of the Liverpool Town Council on Wednesday last, the Health Committee submitted certain resolutions in respect of the malconstruction of sewers recently made, and recommending the censure and dismissal of certain subordinate officials. The consideration of the subject was adjourned for a fortnight.

National Association for the Promotion of Social Science.—This year's Social Science Congress is to be held in Manchester. Last week a meeting of the local executive committee was held, Mr. J. H. Agnew in the chair. It was reported that the following representative members had been nominated to serve on the committee, viz.:—By the Manchester Medical Society, Dr. F. A. Heath; by the Royal Infirmary, Mr. E. Stanley Heywood; by the School of Art, Mr. W. H. J. Traice; by the Manchester Society of Architects, Mr. Thos. Worthington; by the Manchester and Salford School Boards, Mr. Herbert Birley. The resolution passed by the committee at its first meeting, fixing the guarantee fund for meeting the local expenses of the congress at 3,000*l.*, was reconsidered, and it was resolved to fix the amount of the fund at 2,000*l.*

The Dillon System of Raising Sunken Vessels.—This is described as consisting in surrounding the vessel to be raised by an air-tight bell of tent-like construction, which is floated and lowered over the vessel by means of simple mechanical appliances. The water is then displaced from beneath this bell, and at the same time from out of the ship, by means of compressed air. "When a sufficient amount of water has been displaced, the bell rises to the surface, and with it, strange to say, comes the ship, although not in any way supported or touched by the bell." This is the essential and distinguishing feature of the latest development of a system of ship-raising, upon which Mr. Dillon is said to have been engaged for several years past. The difficulty would seem to be in the application of the system.

Accident at Clapham.—On Tuesday Mr. W. Carter held an inquiry at St. Thomas's Hospital into the circumstances attending the death of Mr. Charles Owen, aged 51 years, lately residing at No. 86, Brook-street, Kennington-road, South Lambeth. It appeared from the evidence that the deceased was employed by Messrs. Phillips & Rice, builders, of Paradise-road, Clapham-road. On the 23rd of May he was placing a new skylight on the roof of a large room at the rear of the premises of Messrs. Fancourt, linen-drapers, Clapham-road, when the old structure that was being removed gave way, and the deceased fell with it a distance of over 15 ft., striking his head against the edge of a chair-back, inflicting a severe scalp-wound. He died on the 1st inst. The jury returned a verdict of "Accidental death."

Wilts Archæological Association.—It has been arranged to hold the annual congress of this Association on the 12th, 13th, and 14th of August. Marlborough will be the head-quarters, and excursions will be made as follows:—On the 12th, by Granham Hill to Oare Hill, crossing Wans Dyke, to the earth-works at Huish Hill, camp at Martinsell, *viâ* Wootton Rivers to the Forest, by the Obelisk to Savernake House, thence by Folly Farm to Marlborough; on the 13th, by Rockley to Barbury Castle, thence by road of Ridgeway, to Avebury (Temple, Church, and Manor House), to Silbury, Valley of Stones, and Devil's Den.

City of London School Competition.—The *City Press* of Wednesday last stated that on that day the City of London School Committee would meet to receive the report of the sub-committee on the selection of plans for the new school buildings on the Embankment. The sub-committee (according to our contemporary) would recommend that the first premium be awarded to the design bearing the motto "Live and Learn"; the second premium to "Simplicity"; and the third to "Playgrounds." Whether these recommendations were adopted by the committee we do not know, neither have we been able to ascertain the names of the authors of the designs mentioned.

The Brussels Exhibition of 1880.—In the Champs des Manœuvres at Brussels, the works for the National Exhibition of 1880 are progressing actively. According to the *Parisian*, the pavilion on the right has its walls already three or four mètres above the ground, and the foundations of the second one are rising rapidly. About 300 men are employed there, and more than 200 carts are constantly bringing materials. A well-paved road, five mètres in width, has been constructed from the entrance of the plain to the centre of the structure. A railway in connexion with those of the city is being made, and will be finished in a few days.

A Good Engraving.—Mr. Arthur Lucas, of Duke-street, Piccadilly, sends us an impression of an important plate he is about to issue, engraved by Mr. Geo. H. Every, from the picture by Marcus Stone, A.R.A., which may fairly be considered that painter's *chef d'œuvre*, and which was selected by the commissioners as his chief contribution to the Universal Exhibition in Paris last year. Its title is "Sunshine and Shadow," and it illustrates the lines from Shakespeare,—

> "'Tis better to be lowly born,
> And range with humble livers in content,
> Than to be perk'd up in a glistering grief
> And wear a golden sorrow."

We can well believe what we are told, that the engraving is the result of upwards of twenty-four months of assiduous and loving labour on the part of Mr. Every, and we will add that it is as conscientious a transference on to steel of all the subtleties of tone and refinements of a painter's conception and touch as we have ever seen. It is an excellent picture charmingly rendered.

Adhesion of Mortar.—In building the Pont de Claix, some experimental blocks were joined by mortar, which was allowed to harden for three years, when the mortar was broken by an average load of 10·0125 kilogrammes per square centimètre [142·228 lb. per square inch]. This experiment seems to show that the adhesion of mortar to stone is only about one-third as great as the cohesion of the mortar itself. The result is noteworthy, as this adhesion is the true measure of the resistance of masonry. Further experiments of a similar kind are desirable in order to establish formal conclusions.—*Ann. des Ponts et Chauss.*

Southampton Docks.—The coffer-dam at the new dry-dock works gave way at about a quarter past ten o'clock on Monday night, causing a breach in the same 180 ft. in length, and admitting the tidal-water into the new dock, but otherwise not doing any serious damage. The accident is attributable to the soft ground and the high tide at the time, together with the constant and heavy rain on Monday. Fortunately, no person was injured, and the completion of the dry-dock works will not be much retarded by this accident.

The Mansion of Cowarth Park, recently alluded to, has been provided with a new water supply and waterworks. The fresh spring-water, brought in a conduit from a distance, is raised by a high-breast water-wheel and pumps, the power being given by a polluted stream. The machinery was constructed and supplied by Messrs. Warner & Sons, of Cripplegate, under the direction of Mr. S. B. Goslin, one of the seven essayists on national water supply districts and divisions, accepted by the Society of Arts at their recent Congress.

New Public Buildings, Ipswich.—Mr. Charles Barry, ex-President of the Royal Institute of British Architects, was requested by the Corporation of Ipswich to advise them upon twenty-one sets of designs submitted in competition for the proposed new building adjoining the town-hall, intended to accommodate a new post-office, and some of the municipal offices found to be necessary, and to say which of the designs comply with the conditions issued by the Corporation, and which design he would recommend to be carried out. Mr. Barry has just now sent in his report.

Work for Builders.—The *John o' Groat Journal* says that although numerous houses have been built in the town during the past ten years, there is not a decent dwelling unlet in Wick or Pulteneytown at the present time. "More dwelling-houses of a moderate rent are urgently required. Now is the time to build."—At Oundle, in Northamptonshire, there is stated to be a continual and increasing demand by the working class generally for comfortable and convenient dwelling-houses. It would seem that suitable sites are now available for the erection of such buildings.

Fall of Houses.—An accident of an alarming nature occurred in the Junction-road, Kentish Town, on Saturday evening last. A row of shops had just been completed, and were in course of letting, none, however, being occupied at the time. About 7 p.m. a loud crash was heard, and it was found that two adjoining shops in the row had fallen in, carrying away a large quantity of woodwork. The remaining portions of the wall were speedily removed, leaving only the partition wall standing.

Ecclesiastical Art.—It is proposed to hold an exhibition of works of ecclesiastical art in London, during May and June, 1880. The exhibition will be open to British and foreign art, and will comprise a loan collection of Mediæval and modern ecclesiastical art, a division for architects, artists, and others who exhibit original work, and another for works of manufacturers. The gallery of the Albert Hall is spoken of as the probable locality.

Paris taking a Hint from South Kensington.—The Paris correspondent of the *Times* says that a pedagogic museum and library are to be established at the Ministry of Public Instruction. M. Ferry, in decreeing this measure, dwells on the example of the 20,000 volumes in the scholastic collection at South Kensington, an example already imitated by Canada, Russia, Austria, and other countries.

South Kensington to Chelsea.—The Albert Bridge Company originally undertook to continue Oakley-street to the Fulham-road. It is to be hoped the Metropolitan Board of Works will now take up the scheme. A wide thoroughfare from South Kensington to Cheyne-walk, and so over the river, would be a great and valuable public improvement.

"Cow-house and Piggery Fittings."—For palace or piggery architects must be alike prepared. The St. Pancras Ironwork Company have issued an illustrated catalogue of iron cow-house and piggery fittings, with prices and details. In view of the stringent Orders in Council respecting keepers of cows these fittings are likely to be in special request.

The Monument to King Frederick William III.—By inadvertence, the monument in Cologne to King Frederick Willliam III., of Prussia, illustrated in our last issue, is named under the view as that of the *Emperor* Frederick William. The article describes it correctly.

Lord Wolverton has been making great improvement in his kennels at Iwerne-Minster. Claridge's patent asphalte has been laid to all the kennel floors and approaches, with a view of rendering them watertight, which is so essential a matter for hounds' feet. The work has been entrusted to Messrs. G. Smith & Co., of London.

Copyright.—At the next meeting of the Social Science Association, on the 9th instant, a paper, by Mr. J. Leybourne Goddard, "On the Law of Copyright, with special reference to the term for the duration thereof, and the Report of the late Royal Commission with reference thereto," will be read and discussed.

The Paddington Branch of the London Joint Stock Bank.—We may add to our description of this new building that it has been fitted up with electric bells and alarms, by Mr. Julius Sax.

Burning of a Race Stand.—At the Auteuil steeple-chases, near Paris, on Monday, the secondary stand caught fire during a race, and when crowded with people. It was utterly destroyed, but, fortunately, no person was injured.

Sale of Architectural Books.—The library of the late Mr. C. R. Cockerell, R.A., will be sold by Messrs. Christie, Manson, & Woods, on the 10th and 11th inst. At the same time a section of the library of the late Mr. P. Hardwick, R.A., will be sold by the same firm.

Melbourne International Exhibition of 1880.—It is announced that the time for receiving applications for space to exhibit at the Melbourne International Exhibition of 1880 has been postponed to the 31st of October.

TENDERS

For the erection of three houses, at Hackney, for Mr. James Child:—

Fortescue	£1,995 0 0
Larter & Son	1,939 0 0
Sargent	1,923 0 0
Forrest	1,847 0 0
Beale	1,800 0 0

For painting and other works at the Leytonstone School, for the Guardians of St. Matthew, Bethnal-green. Messrs. A. & C. Harston, architects:—

Wythe	£141 0 0
Emmett	123 10 0
Arber	123 0
Cocks	110 0 0
Derby	97 0 0
McCarthy (accepted)	80 0 0

For distempering works, &c., at the Poplar and Stepney Sick Asylum, Devons-road, for the Managers. Messrs. A. & C. Harston, architects:—

Whitford	£221 0 0
Sheffield & Co.	199 14 0
Derby (accepted)	198 10 0

For the erection of four houses, Gale's-gardens, Bethnal-green. Messrs. A. & C. Harston, architects:—

Wire	£1,829	0	0
Thomason	1,816	0	0
Beale	1,780	0	0
Wise	1,697	0	0
Edwards	1,634	0	0
Johnson (accepted)	1,427	0	0

For the erection of a new warehouse in Fieldgate-street. Mr. Walter Stokes, architect. Quantities supplied:—

Ashby, Bros.	£4,695	0	0
Browne & Robinson	4,667	0	0
Crabb	4,460	0	0
Conder	4,395	0	0
Mark	4,200	0	0
Downs	4,185	0	0
Grover	4,144	0	0
Little	3,848	0	0

For alterations, Zetland Arms, Brompton, for Mr. Puttnam. Mr. H. J. Newton, architect:—

Grimwoods	£364	0	0
Lamble	363	0	0
Knight	350	0	0
Godden (accepted)	335	0	0

For cabinet-fittings, &c., at the George and Dragon, St. John-street, Clerkenwell, for Mr. Pierpoint. Mr. H. J. Newton, architect:—

For Cabinet.

Warne	£241	0	0
Godden (accepted)	232	0	0

For Counter.

Heath	190	0	0
Godden	149	0	0
Warne (accepted)	135	0	0

For the erection of three houses, at Denning-road, Hampstead, for Mr. A. Field. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Wall, Bros.	£4,265	0	0
Linzell & Sons	3,963	0	0
Scrivener & Co.	3,915	0	0
Morter	3,893	0	0
Williams & Son	3,770	0	0
Niblett	3,497	0	0

For the erection of three houses and shops at Balaam-street, Barking-road, for Mr. T. Kerslake. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Lewis	£2,599	0	0
Read	2,573	0	0
Hosking, Bros.	2,570	0	0
North, Bros.	2,502	0	0
Morter	2,393	0	0
Hearle & Son	2,293	0	0

For alterations and additions to Nos. 32 and 34, Chrisp-street, Poplar, for Mr. R. Jones. Mr. J. T. Newman, architect:—

Harris & Wardrop	£335	0	0
Abrahams	297	0	0
Sheffield & Prebble	287	0	0

For Limehouse new Town-hall, for the Vestry of St. Anne's. Messrs. A. & C. Harston, architects. Quantities by Mr. G. P. Raggett:—

Prout	£13,450	0	0
Staines	12,984	0	0
Crockett	12,831	0	0
Foster	12,555	0	0
Crabb	12,500	0	0
Johnson	12,195	0	0
McLachlan & Sons	12,080	0	0
Stevenson	11,975	0	0
Braid & Co.	11,800	0	0

For the erection of a new warehouse at Putney. Mr. George Edwards, architect. Quantities supplied:—

Lidstone & Son	£1,000	0	0
Wilkins	997	0	0
Martin, Wells & Co.	955	0	0
Aviss & Co.	948	0	0
Avies	860	0	0
Richardson	855	0	0
Cullum	791	0	0
Williams	788	0	0

For alterations and additions to Ravenswood, Loats-road, Clapham Park, for Mr. F. Corfield. Mr. I'Anson, architect. Mr. D. Campbell, surveyor:—

Colls & Son	£1,972	0	0
Brass	1,909	0	0
Rider	1,878	0	0
Pritchard	1,839	0	0
McLachlan & Sons	1,748	0	0

For new Primitive Methodist Chapel, Worksop. Quantities supplied:—

Tutin	£2,340	0	0
Illett	2,250	0	0
Rollet & Wilkinson	2,195	0	0
Hanson	2,100	0	0
Wilson	2,058	0	0
Goddard	1,957	0	0
Wilson & Bulling (accepted)	1,900	0	0

For house, No. 1, Manor-road, High Barnet, for Mr. G. J. Urddicombe. Mr. John Ladds, architect:—

Macfarlane	£1,040	0	0
Somerville & Hill	960	0	0
Butler	930	0	0
Niblett	814	0	0
Gould & Brand (accepted)	725	0	0

For house, No. 2, Manor-road, High Barnet, for Mr. G. J. Urddicombe. Mr. John Ladds, architect:—

Macfarlane	£1,195	0	0
Somerville & Hill	1,080	0	0
Butler	911	0	0
Niblett	860	0	0
Gould & Brand (accepted)	860	0	0

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